

# DLA STRATEGIC MATERIALS



## Compressed Gas Cylinder Safety Program 2016

Hard copies of this document may not be the current version. Refer to the "I Am The Key" to verify the current version.

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### Compressed Gas Cylinder Safety Program

#### I. Purpose

Special storage, use, and handling precautions are necessary in order to control the hazards associated with compressed gas cylinders. The purpose of the Strategic Materials Compressed Gas Cylinder Safety Program is to prevent occupational injuries and illnesses related to the storage and use of compressed gas cylinders. Strategic Materials will accomplish this through training in the handling, storage, use, inspection, and movement of compressed gas cylinders. Only properly trained employees will be permitted to perform operations involving compressed gas cylinders. Training will be conducted based on the contents of this program.

#### II. Scope

This compressed gas cylinder program applies to all Strategic Materials personnel that use, handle, store, inspect or transport compressed gas cylinders. Strategic Materials will use compressed cylinders filled with an asphyxiant gas, ( such as Argon or Nitrogen ) for the purpose of displacing oxygen from containers filled with our commodities. The most up to date copy of this program will be located on I Am The Key. Hard copies of this program will be maintained at DLA Strategic Materials facilities.

#### III. Responsibility

The following personnel have key roles and responsibilities in carrying out the SM Compressed Gas Cylinder Safety Program:

- The Environmental Branch Manager is responsible for the overall operation and administration of the program.
- Distribution Facility Managers are responsible for the implementation, evaluation, continuing maintenance, and effectiveness of the program at their respective depots.
- Employees shall be responsible for completing training, as necessary, complying with the procedures outlined in this program, and informing their supervisor of any problems, defective equipment, or lack of proper storage space for compressed gas cylinders used by them.

- Representatives identified by the Environmental Branch Manager will be responsible for conducting training on this program.

#### **IV. References**

*OSHA 29 CFR 1910.101*

*Compressed Gas Association*

*National FireProtection Association Code 55*

*Strategic Materials Depot Emergency Response Plan.*

*Strategic Materials Hazard communication Plan.*

#### **V. Training**

Employees who use and handle compressed gas cylinders will be trained in the safe use, inspection, handling, storage, and movement of compressed gas cylinders. Refresher training will be provided annually. Minimum training to be provided will include the following:

- Receiving and inspection of cylinders
- Labeling
- General Precautions
- Safe Handling of Containers
- Valve Protection Caps and Regulators
- Storage Requirements
- Emergency Procedures
- Disposal of Cylinders
- Special Precautions for Storing and Handling of Asphyxiant Gases

#### **VI. Receiving and inspection**

Compressed gas cylinders should be visually inspected upon receipt for correct labels and markings, including:

- A stamped hydrostatic test date within the last five years.
- Presence of a valve protection cap.
- The contents of the compressed gas cylinder, stamped or stenciled on the cylinder itself.

This visual inspection will include the cylinder, safety relief devices, valves, protection caps and stem. The inspector should check for any leaks, cracks, etc.

If a cylinder is thought to be defective it should be returned to the supplier for replacement. Compressed gas cylinders that are missing a label or in which contents cannot be identified shall be returned to the supplier.

Under no circumstances should employees attempt to repair defective cylinders.

**Reference:** *CGA pamphlet, C-6-13 standard for visual inspection of steel compressed gas cylinders; Strategic Materials Hazard Communication Program, National Fire Protection Association Code 55*

## **VII. General Precautions**

The following general precautions shall be taken by all employees:

- Only properly trained employees should handle and/or use compressed gas cylinders.
- Employees must wear proper PPE during all operation requiring the handling or use of compressed gas cylinders.
- When cylinders are moved they shall be disconnected from any regulators, and the valve caps shall be secured in place before the cylinders are released from their securing device.
- Cylinders shall be moved only on a hand truck or other cart designed for handling gas cylinders.
- No more than one cylinder shall be handled at a time except on carts designed to transport more than one cylinder.

## **VIII. Safe Handling of Containers**

The following safe handling procedures shall be followed by all employees:

- Secure all cylinders as soon as they are delivered to the area where they will be used.
- Never remove a cap from an unsecured cylinder.
- Do not lift or move the cylinder by the cap.
- Leak test all connections to a cylinder with a soap solution.
- Always keep removable caps and valve outlet caps/plugs on containers except when connecting to dispensing equipment.
- If a cylinder valve cannot be opened, the valve should never be forced. If a valve cannot be opened by hand, the cylinder should be returned and another obtained. Employees must not attempt to repair cylinders or cylinder valves, or to force stuck or frozen cylinder valves.
- Open cylinder valve slowly, directed away from your face.
- When empty, close and return cylinders. Empty cylinders must be marked MT or Empty.
- Be sure valves are closed when not using the container and before returning containers.

**Reference :** *CGA pamphlet P-1-15 standard for safe handling of compressed gases in containers.*

## **IX. Valve Protection Caps and Regulators**

The cylinder valve is the most vulnerable part of the compressed gas cylinder. Most compressed gas cylinders require the installation of at least one valve. This valve allows the cylinder to contain gases and allows gas to be filled into or emptied from the cylinder. Leaks can also occur at the regulator, cylinder stem and at the hose connection.

- Use only regulators, pressure relief devices, valves, hoses, and other auxiliary equipment designed for the specific container and compressed gas to be used.
- Never use a cylinder without a regulator
- Inspect the valve for damage and foreign materials before connecting to the cylinder.

**References:** *CGA pamphlets : S-1.1-11 Pressure relief device standards-part 1- cylinders for compressed gases ,S-1.2-09 Pressure relief device standards-part 2- portable containers for compressed gases*

## **X. Storage Requirements**

Employees shall comply with the following requirements for storage:

- Store cylinders in designated, labeled storage area.
- Always secure gas cylinders upright (with valve end up) to a wall, cylinder hand truck, or cylinder rack.
- Keep the steel protective cap screwed on.
- Store full and empty cylinders apart.
- Label empty cylinders and those meant for return to the supplier.
- Secure cylinders with chains or cables to keep them from falling over.
- Store compressed gas containers in dry, well-ventilated areas away from exits.
- Store containers off the ground and out of extremely hot or cold environments.

## **XI. Special precautions for storing and handling of Asphyxiant Gas**

Any gas that has the potential to displace oxygen in sufficient quantities can cause asphyxiation. Inert gases, such as Nitrogen and Argon must be treated with caution. If left to leak into closed space, these gases may displace oxygen and create a risk of asphyxiation. The following special precautions shall be taken for asphyxiant gases:

- Do not store asphyxiant gases in areas without ventilation.
- An oxygen detection device must be present when the calculated oxygen concentration is less than 18% if the full contents of the cylinder were released.
- In the event of a leak, shut off the source of the gas leak if there is no risk to personnel and ventilate the area.
- If a person has symptoms of asphyxiation, move the victim to fresh air and obtain proper medical attention.

**References:** *CGA pamphlets G-10.1-08 Commodity Specification for Nitrogen, and , G-11.1-08 Commodity specification for Argon; SDSs for specific gas.*

## **XII. Emergency Procedures**

In case of a gas emergency immediately leave the area and notify the Depot Manager. Follow the Strategic Materials Depot Emergency Response Plan.

**References:** *National Fire Protection Association Code 55; Strategic Materials Depot Emergency Response Plan*

## **XIII. Removal of Cylinders**

The following steps shall be taken prior to the removal of cylinders:

- Close and tighten valves and replace valve caps on cylinders when they are empty
- Mark cylinder empty
- Separate and secure away from full cylinders while waiting for supplier
- Contact the supplier to schedule pickup.