

# HSE Management System

## Compressed Air

### REGULATORY STANDARD:

OSHA – 1910.146

Prepared	Reviewed	Approved	Effective Date	Version No.
<hr/> Carol Stallworth, Safety Specialist	<hr/> Sam Cross, SVP - Americas	<hr/> Sam Cross, SVP - Americas	2/23/18	02

#### Important Notice:

1. This procedure is a Controlled Document and shall not be amended without the authority of the Safety Specialist – North America.
2. Any queries or feedback concerning the contents of this Procedure should be addressed to the Safety Specialist – North America.
3. This document is rendered null and void upon print.

## INDEX

---

- 1.0 OVERVIEW
- 2.0 SAFETY HAZARDS
- 3.0 SAFETY REGULATIONS
- 4.0 ALLOWABLE USE OF COMPRESSED AIR
- 5.0 GUARDING
- 6.0 AIR COMPRESSORS VISUAL INSPECTIONS

## 1.0 OVERVIEW

Many injuries occur because of the misuse of compressed air. Compressed air is a powerful tool and can accomplish useful things in a variety of applications. But, horseplay or improper work methods with compressed air, however innocent it may start, can end with disastrous consequences. It may seem amusing to direct a jet of air at a fellow worker, but it can actually produce severe internal injury that may result in death. It is extremely important to understand the safety requirements relating to using compressed air in the workplace.

## 2.0 SAFETY HAZARDS

Filings, chips, shavings, particles of metal, etc. are thrown up when compressed air is used for cleaning purposes. The pressure necessary to remove the particles from equipment and surfaces is also strong enough to blow them into the eyes, ears or skin of people nearby. The greatest danger is use of compressed air in dusting one's self down lies in accidental internal injury to the body. Compressed air can enter the body where the skin is not an intact barrier (i.e., ear, nose, rectum or any scratch or puncture in the skin, however small) and can cause the affected part to swell to alarming proportions and accompanied by severe pain. If the air gets into the bloodstream it can make its way into the small blood vessels of the brain, burst the vessels and cause death. A pressure strong enough to dust or clean is strong enough to reach the skin and penetrate the body. Even a pressure as low as 5-10 pounds per square inch (PSI) can cause serious injury.

## 3.0 SAFETY REGULATIONS

California Title 8, 3301 and Fed-OSHA 29 CFR Part 1910.242(b) are the governing regulations for use of compressed air for industry. Due to the serious injuries caused by compressed air, the OSHA requirements focus on the safe use of air guns for cleaning purposes as to allowable pressure and chip guarding. The federal OSHA regulation states, "Compressed air shall not be used for cleaning purposes except where reduced to less than 30 PSI and then only with effective chip guarding and personal protective equipment."

## 4.0 ALLOWABLE USE OF COMPRESSED AIR

The regulations relate to the cleaning objects or items, **NOT PEOPLE** (i.e., blow drying parts that were pulled out of a plating bath). The phrase "reduce to less than 30 PSI" means that the nozzle pressure or opening of a gun, pipe, cleaning lance etc., used for cleaning purposes will remain at a pressure level below 30 PSI in the event the tool is dead ended— meaning, if the tip of an air gun is blocked. This can be achieved by relief ports that discharge sufficient air to reduce the air pressure at the nozzle to less than 30 PSI. It is prohibited to use compressed air to clean clothing while it is worn or any part of the body under any circumstances.

## 5.0 GUARDING

The phrase "effective chip guarding" means any method or equipment that prevents a chip or particle (of any size) from being blown into the eyes or unbroken skin of the operator or other workers. Effective chip guarding may be separate from the air nozzle as in the case where screens or barriers are used. The use of protective cone air nozzles is generally acceptable for protection of the operator. However, barriers,

baffles or screens may be required to protect other workers near the operator if they are exposed to flying chips or particles.

Under no circumstances may employees use compressed air to clean off clothing or any part of their body. Pressures as low as 5-10 PSI have been known to cause serious injury. The federal OSHA regulation pertains only to the cleaning of parts or objects, not people.

## 6.0 AIR COMPRESSORS VISUAL INSPECTIONS

### 6.1 Template for Surveying Air Compressors Using OSHA Guidelines

#### 6.1.1 Safety valves.

Safety valves should be constructed, installed, and maintained in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME), Section VIII Edition 1968.

#### 6.1.2 Installation and equipment requirements.

##### 6.1.2.1 Installation.

- a) ALL air receivers should have a nameplate with the ASME code symbol (a clover leaf with a "U" or "UM") on the tank to indicate it is in compliance with the ASME Code and meets all safety and construction regulations.
- b) Air receivers should be so installed that all drains, handholes, and manholes therein are easily accessible. Air receivers should be located in normally accessible locations.
- c) Is the installation properly secured? Does it interfere with other operations?

##### 6.1.2.2 Drains and traps.

- a) ASME Section VIII, Div. 1, paragraph UG-25(f), requires a suitable drain opening in air receivers. A drain pipe and valve should be installed at the lowest point of every air receiver to provide for the removal of accumulated oil and water. Adequate automatic traps may be installed in addition to drain valves.
- b) The drain valve on the air receiver should be opened and the receiver completely drained frequently to prevent the accumulation of excessive amounts of liquid in the receiver.

#### 6.1.3 Gauges and valves.

6.1.3.1 Every air receiver should be equipped with a readily visible indicating pressure gauge and with one or more spring-loaded safety valves. The total relieving capacity of such safety valves must prevent pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10 percent.

6.1.3.2 No valve of any type shall be placed between the air receiver and its safety valve or valves.

- 6.1.3.3 Safety appliances, such as safety valves, indicating devices and controlling devices, should be constructed, located, and installed so that they cannot be readily rendered inoperative by any means, including the elements.
- 6.1.3.4 All safety valves should be tested frequently and at regular intervals to determine whether they are in good operating condition.