

Before you begin:

Review the material shown here as well as the resources so you have a better understanding of the subject and the sequence of topics. Have a few compressed air examples for group discussion.



Introduction

Compressed air is used most commonly in the agriculture and construction industries. Compressed air is often used to power pneumatic machinery such as drills, hammers, automation equipment and conveyors. We use compressed air in our everyday lives. Many of us have used the local service stations compressed air to top off our vehicle tire pressure. Misuse of compressed air can cause serious injuries and even deaths. Understanding the hazards associated with compressed air can reduce the risk of injury. There is also risk of property damage when pressurized systems are not maintained or not used properly. Review the equipment manufacturer's recommendations before use. SMSs are built on the ideas that:

- People need to drive change to reduce risks and promote a positive safety culture.
- Planning for the changes that will drive safety throughout the organization.
- Development and maintenance of safety programs will lead the organization to compliance and continuous improvement.
- Measurement of performance drives continuous improvement.

Definitions

1. **Compressed air** - air kept under greater than atmospheric pressure.
2. **Air compressor** – is a pneumatic device that converts power into potential energy stored in a pressurize tank.
3. **psi – pounds per square inch** – a measure of pressure.

Discussion

Hazard recognition is key to preventing injuries and property damage. Industrial compressed air is usually provided by a compressor. The normal pressure range for industrial compressed air is 100-120 psi. Compressed air as low 12 psi can blow an eye out of the eye socket. Often employees use compressed air to blow off parts, clean work areas, or clean dust and material off their person. It may not seem dangerous because they are only using it for short duration. The force associated with compressed air can cause ruptures to the stomach and lungs. If the force is enough for the compressed air to enter the blood stream and travel to the heart or brain, it can cause stroke or heart attack symptoms. This is known as an embolism and can be fatal. OSHA requires compressed air be reduced to 30 psi for blowing off equipment. This is done by adding a pressure reducing nozzle like a venturi to the gun tip. These reducing tips state that they reduce the pressure to 30 psi. Remember the reduction is for the air coming out of the gun, the hose still has 100-120 psi inside.

The noise from an air supply system in an industrial setting can exceed mandatory hearing protection requirements of 90 decibels. Routine use of compressed air can cause short term or permanent hearing loss. This hazard and others can be reduced or prevented by using the proper personal protective equipment like safety, glasses, safety goggles, hearing protection and protective clothing. You should also follow additional manufacturers requirements from the compressor manufacturer. One way of ensuring that employees are following the proper work procedures for each task using compressed air is to create a Job Hazard Analysis or Job Safety Analysis.

In addition to employee injuries, compressed air can present a physical hazard. The physical hazard is rupture of pressure vessels, air filled cylinder, or air lines. Over filling these items can cause in a rupture which can result in a rapid pressure release. When filling any item with air, know what the maximum pressure is and do not exceed that pressure. Over pressuring items can also lead to shortened equipment life. Always use accurate and well- maintained gauges when filling items.

So how can we prevent compressed air accidents/incidents from happening? By recognizing the hazards, discussing potential ways to do the task differently without using compressed air, and having written procedures for task that require the use of compressed air.

Check sheet for compressed air safety:

- Ensure that air compressor is on a preventative maintenance program.
- Verify that all compressed fittings are rated for the appropriate pressure and in good working order.
- Verify that all compressed hoses are in good working order.
- Keep air line hoses off the floor.
- Verify that air nozzles/guns are reduce to 30 psi.
- Implement an out of service system.
- Use Lock Out Tag Out for any maintenance on air lines, vessels air valves or tanks.
- Review compressed air safety with employees.
- Verify that employees DO NOT use compressed air to clean themselves off.
- Ensure the required PPE is worn where required.

Improvement – processes to continually evaluate and make progress towards bettering safety and health within the company

Conclusion

We have looked at some of the common hazards of compressed air in the workplace. We reviewed rules and protective measure to put in place to protect workers and your facility. It is not possible to cover all safety concerns; hazard recognition is the key to reducing and preventing injuries. Notify your supervisor if you are not sure how to safely complete a task using compressed are or if there is damage to the equipment.

Group Activity

- Have employees share experiences with compressed air.
- Create a check sheet and perform routine checks on compressed air equipment.
- Create Job Hazard Analysis or Job Safety Analysis for each task using compressed air.
- Demonstrate how much pressure it takes to remove an eye from the socket by hand crushing an aluminum can. Use gloves when crushing the can.

Resources

[OSHA 29CFR 1910.242\(b\)](#)

[OSHA 29 CFR 243\(b\)\(2\)](#)

[California State University Compressor Inspection Checklist](#)