SOP Compressed Gasses

Purdue University	Physics Department	PRIME Lab
Applicable rooms:	All PRIME Lab areas	

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INTRODUCTION

Special systems are needed for handling materials under pressure. Toxic and corrosive gases present special problems in designing engineering controls. The physical and health hazards of any material are typically compounded by the pressure hazard.

HAZARDS

May produce an oxygen deficient atmosphere if large volumes of gas are released in a short time
Escaping gas or liquid may cause low temperature burns
Cylinder or fittings could fail causing a pressure rupture and resulting in a shower of metal fragments
Some gasses have additional hazards, for example nitric oxide and oxygen are also oxidizers

PROCEDURES

1. Read and understand the MSDS or SDS for any chemicals to be used before starting work.
2. Do not use a compressed gas cylinder unless the cylinder is clearly marked or labeled with the cylinder's content. Never rely on the color of a cylinder to identify its contents.
3. Cylinders of compressed gases must be handled as high energy sources.
4. All uncapped cylinders must be secured independently (not ganged behind a single chain) to a solid element of the lab structure.
5. Cylinders must be moved on an approved cylinder cart. Cylinders on wheeled carts must be capped and secured by an approved cylinder support strap or chain. Carts are not acceptable for supporting uncapped or in-use cylinders unless designed for that purpose (like welding carts).
6. Do not attempt to take a loaded cylinder cart up or down a stairway.
7. Never bleed a cylinder completely empty. Leave a slight pressure to keep contaminants out
8. Oil or grease on the high pressure side of an oxygen cylinder can cause an explosion. Do not lubricate an oxygen regulator or use a fuel gas regulator on an oxygen cylinder.
9. Always use appropriate gauges, fittings, and materials compatible with the particular gas being handled. Regulators must be compatible with gas cylinders (do not use adapters)
10. Inspect ancillary connections, valves, regulators, tubing, and other devices used with compressed gases regularly
11. Always close the cylinder valve of an apparently empty cylinder before disconnecting the regulator; and when the cylinder is not in use. Do not leave pressure on the regulator when the cylinder is not in use.
12. Appropriate PPE and engineering controls must be used
13. Never use Teflon tape or similar pipe joint compounds when attaching regulator to cylinder

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MINIMUM PPE REQUIREMENTS

1 Safety glasses with side shields or goggles
2 Appropriate gloves if handling fittings cooled by expanding gas
3 Any additional requirements of hazard certification in room where work is done

STORAGE

1 Gas cylinders should be stored in a cool dry place
2 All uncapped cylinders must be secured independently (not ganged behind a single chain) to a solid element of the lab structure.
3 Capped cylinders may be gang chained (several cylinders held by one chain).
4 Cylinders of flammable gases should be separated from oxidizers.

DISPOSAL

1 All chemical waste must be handled as specified in chapter 7 of the CHP
2 Empty cylinders are generally returned to the supplier with any leftover gas

EMERGENCY PROCEDURES

1 Leaks should be handled as specified in chapter 8 of the CHP and the MSDS of SDS
2 If leaks can not be stopped by closing the cylinder valve, the area should be evacuated if the leak is significant or the gas is hazardous.
3 Skin or eye contact should be treated as specified in the MSDS or SDS if any treatment is needed.
4 For any eye injury or significant other injuries Purdue EMS should be called immediately.
5 All injuries must be treated as specified in section 6.7 of the CHP

APPROVAL

PI Marc Caffee

Signature: MM Caffee Date: 6/17/2014