

## NIST SAFETY ALERT BULLETIN

February 8, 2010

OU Safety Coordinators, please forward to relevant staff in your OU.

### Re: Wall Mounted Support Brackets for Compressed Gas Cylinders

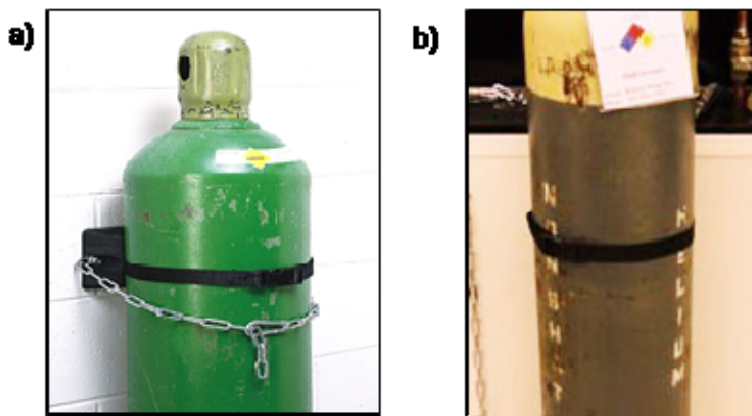
Two safety issues involving wall mounted support brackets for compressed gas cylinders were recently brought to the attention of the NIST Safety Office in Gaithersburg.

#### ISSUE 1

Safety Office personnel were asked to investigate a defective snap clip used on a wall mounted compressed gas cylinder support bracket purchased from the NIST 301 Storeroom, Gaithersburg. The snap clip, which was attached to a nylon strap used to secure the cylinder to the mount, was continually disconnecting under minimal force. During the investigation, two observations affecting the security of the compressed gas cylinder were noted in this particular lab. Inspection of neighboring labs indicated that these observations were not isolated incidents.

a. Missing Safety Chain:

Figure 1a shows a properly installed wall bracket manufactured by Lab Safety Supply® (item # 18319). As per the manufacturer's instructions, both the safety chain and nylon webbing stabilization strap are required for proper use. The safety chain serves as the primary control in ensuring that the compressed gas cylinder does not fall over and the nylon webbing strap serves as a stabilization device. During the inspection, the safety chain was observed missing, Fig. 1b. The absence of the safety chain resulted in the nylon webbing strap as the only safety device securing the cylinder.



**Figure 1:** a) Properly used Lab Safety Supply wall bracket with safety chain and nylon strap installed (image courtesy of manufacturer) and b) same wall bracket installed at NIST that is missing the safety chain.

b. Defective snap clip on nylon webbing stabilization strap:

The second issue was the defective snap clip found on the same type of wall bracket discussed above. As seen in Fig. 2, the malfunctioning snap clip was a result of a buckle that had prongs bent inwards (left side of figure). A non-defective buckle (right side of figure) was observed to have prongs that extend straight out. The result of this defect is that minimal force was required to cause the snap clip to disconnect leaving the compressed gas cylinder unsupported, particularly if the safety chain is not installed or in use.



**Figure 2:** Image of a defective (left) and non-defective (right) buckle. The defective buckle is angled inward which results in minimal force being required to cause the snap clip to disconnect.

## ISSUE 2

Safety personnel were also alerted to another issue with wall mounted compressed gas cylinder brackets. While no longer in production, the Fisher brand brackets, shown in Fig. 3, are widely used across the NIST campus. The major concern with these brackets is the degrading cotton webbing strap used to secure the cylinder to the bracket. Due to age, these straps are disintegrating, resulting in easy tearing of the strap, as seen in Fig. 3. As this particular bracket relies solely on the cotton webbing strap for security, there is an elevated risk of a compressed gas cylinder falling over if the strap should fail.



**Figure 3:** Image of Fisher brand wall mounted compressed gas cylinder bracket used at NIST. Note the tears in the cotton strap and torn cotton webbing in the buckle location. These tears were intentionally produced by staff to show how frail the cotton strap had become.

### **IMMEDIATE ACTION REQUIRED:**

Based upon the results from a small sampling of labs, it is apparent that these two issues are not isolated cases. Therefore, lab personnel in Gaithersburg and Boulder are asked to do the following:

1. Assess the method that secures all compressed gas cylinders in your lab(s):
  - a. If you have the Lab Safety Supply wall mounted cylinder bracket described above (Fig. 1), or one similar, ensure that it has been properly installed with both the safety chain and the nylon webbing strap, making certain that both safety features are in use. Further, inspect the buckle to determine if it is defective. If you encounter either a missing safety chain or a defective buckle, please secure the cylinder to the best of your ability and contact the Safety Office (Gburg x5818 or Boulder x6822) for help with a permanent remedy.
  - b. If you have an older Fisher brand bracket (Fig. 3), replace the original cotton strap with either a nylon strap with a threaded buckle or chain with piston clip or similar mechanism. Ensure that it is attached to a permanent structure (e.g., a lab bench that is bolted to the floor or wall).

- c. Section 4.5 of HSI # 22, Laboratory Chemical Storage also provides the following requirements for compressed gas cylinders:
  - Full sized gas cylinders shall be securely strapped to a permanent structure (e.g. a wall or a lab bench that is bolted to the floor or wall,) using a gas cylinder rack or a support designed for gas cylinders.
  - The top one third of the cylinder shall be secured to the rack.
  - Floor stands that secure only the bottom of a full sized cylinder are not acceptable.
- d. Additional requirements based upon this investigation:
  - Nylon straps with snap clips shall not be the sole method used to secure the cylinder. Rather, nylon straps with threaded buckles or chains with piston clips or similar mechanism to safely secure the cylinder are required.
  - Lab personnel should not attempt to install mounting supports to lab walls, please contact the Plant Division or EMSS for this service.

**NOTE:** HSI #5: Compressed Gas Cylinders, last updated in July 1999, will be revised in FY10 to accurately reflect NIST's policy on cylinder storage that can be found in HSI #22 (issued May 2009).

If you have a question about safely securing a compressed gas cylinder in your lab, please call the Safety Office (Gburg x5818 or Boulder x6822) for recommendations.

Thanks for your attention to this matter,  
Steve

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