Safety Alert

Cylinder Regulator Ejected at 300bar

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Description

A second year PhD student was changing the gas cylinder supplying an inert atmosphere glove-box (300 bar EVOS cylinder fitted with a NEVOC regulator) with the assistance of an undergraduate MSci student. They had isolated the glove box and removed the empty gas cylinder moving a new, full cylinder into place. However, when the PhD student went to connect the cylinder they rushed the process believing (incorrectly) that a minor delay would affect the integrity of the glove box.

In doing so they inserted the regulator at an angle and did not properly tighten the screw connection (it was noted that the threads were still visible). Rather than removing and re-attaching the regulator the student opened the gas cylinder causing the improperly connected regulator to be ejected at high speed, narrowly missing both students and impacting on the adjacent wall. Despite visible damage to the regulator the student then reattached the damaged regulator to the cylinder resulting in a leak of gas. The cylinder was still in this condition when the P.I. (having been alerted to the incident) returned and made it safe.

This incident could very easily have caused serious injury (or death) and it was only by pure chance that this was avoided. Had someone been struck by the regulator a prosecution would have been all but certain with the likely result being a heavy fine. The student did not have sufficient experience to recognise the improper connection and stop the procedure. No risk assessment or record of appropriate training had been produced for the process.

Learning Points

- All operations involving gas cylinders should be carried out by trained, competent people and a clear record of training should be completed for each person authorised to work with them, ensuring this is the responsibility of the P.I.
- Cascade training is permissible if it is provided by a competent person (e.g. an experienced technician or Principal Investigator) but cascade training from PhD students is not deemed suitable and sufficient. Where this is not available then training should be sought from an external expert (don't forget to consider the need for regular refresher training).
- All operations involving compressed gas **must** be covered by a risk assessment and standard operating procedures should be prepared covering both the process and the associated safety checks.

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