INCIDENT REPORT— NEAR MISS, AMES HALL (FEB 2014)

A researcher was attempting to change the acetylene pressure on an atomic absorption spectrometer by adjusting the pressure regulator. He inadvertently set the pressure well above 15psig, despite the signs (and the red markings on the regulator) warning not to do so. When acetylene pressure exceeds 15psi, the gas can liquefy; in this state, acetylene can suddenly and explosively polymerize. Fortunately, this did not occur, although the regulator was ruined from overpressurization.

LESSONS LEARNED

- **Keep acetylene pressure below 15psig** in your apparatus. (Acetylene cylinders contain acetone to dissolve acetylene above this pressure, so pure liquid does not form in the cylinders.)
- **Keep regulator pressures below 80% of the maximum reading on a regulator gauge**. Gauges typically do not read accurately above 80% and below 20% of full scale.
- **Use equipment such as pressure regulators only if you have been fully trained** in how they work and how to use them.

DISCUSSION QUESTIONS

1. What are the hazards of the compressed gases we handle?
2. What practices do we follow to avoid injury from those sources?
3. How does a pressure regulator work (mechanically)?
4. Do we have any regulators that are misapplied (e.g, too high a range for the tubing to which they are connected)?

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