



Lessons learned:

Bursting of a PVC pipe connected to a CO₂ compressed gas system

What happened?

Three students were working at the lab on a late afternoon while hearing a loud bursting sound. The students immediately evacuated the lab, shutting the door behind them. Security and safety units arrived at the area and started eliminating gas explosion sources, such as Liquefied Petroleum Gas (LPG) used in labs. Further inspection showed that the CO₂ tubing located in a designated corridor niche was completely frozen, which suggested elevation of pressure in the CO₂ tubing. Upon entering the lab, the safety engineer immediately detected a rupture in the CO₂ tubing connected to a cell. The CO₂ gas system in the lab was shut down until professional installation, including pressure and proof verifications.

What went wrong?

A cell shaker was shuttled into the lab a week prior to the incident. A 1.5-inch PVC pipe was connected between the CO₂ system inlet in the lab and the shaker by the lab team. The piping did not fit the gas type and the pressure parameters of the system. The high pressure inside the unproper tube led to thinning of the tube's walls after a few days, and the improvised CO₂ tubing eventually ruptured.

What went right?

The students took no chances and immediately evacuated themselves out of the lab, shutting the door behind them, yet not locking it. The students also reported the incident immediately and stayed in the area to supply all relevant data.

How to prevent further incidents?

All compressed gas piping should be installed by qualified personnel, under inspection and verification of the Construction and Maintenance Department and the Safety Unit.