Presence of Triethylgallium

What happened?

Triethylgallium was contained in a stainless steel "bubbler" attached to chemical vapor deposition (CVD) equipment. A researcher, working alone outside normal working hours, attempted to change the bubbler for a different one. On loosening a connector, smoke was emitted, signaling the presence of pyrophoric liquid in the pipe. The connector was immediately re-tightened, the lab was evacuated, and PD was called.

Nomex lab coat and disposable nitrile gloves were worn at the time of the incident. No safety eyewear was used

Hazards

Triethylgallium is a highly pyrophoric liquid, i.e., it spontaneously ignites on contact with air.

Injury

No injuries were sustained; however, the incident is considered a "near miss" since the escape of the pyrophoric liquid from the tube would have led to serious consequences, including burn injuries.

Contributing Factors

- Performing hazardous operations alone and out of hours
- Possible error in following the bubbler change procedure. Failure to completely close the manual valve(s) all the way, may have allowed liquid to move up into the tubes when vacuum was applied
- Inadequate SOPs
- Lack of internal training records
- Insufficient PPE

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Corrective Actions

- PI will conduct and document refresher training in accordance with the Annual Laboratory Safety Refresher Memo.
- PI will ensure that all lab personnel are appropriately trained, and if necessary, re-trained in all the hazardous laboratory operations they are individually approved to undertake. PI to retain internal training records.
- PI and research personnel will generate detailed, lab-specific SOPs covering hazardous laboratory operations.
- PI will institute and enforce effective restrictions on working on hazardous operations alone.
- PI will enforce correct PPE usage