INCIDENT—PRESSURE RELIEF, UTL (APR 2014)

A pair of undergraduates in a chemistry class loaded a pressure vessel (a "Parr bomb") with reactants and placed the vessel in a furnace, leaving the reaction to run for the night.

Several hours later, during an evening class in the same lab, an unanticipated reaction occurred in the vessel. This raised the pressure beyond the established safe operating limit for the experiment and burst the vessel's safety rupture disc. The class heard a loud bang followed by a strong odor described as "microwaved broccoli."

The instructor evacuated the lab. Because procedures were not clear, a delay followed before anyone contacted Security and Health, Safety & Environment. Once the authorities were notified, the laboratory was inspected for damage, and ventilation was increased to remove the odor (which had spread throughout the floor).

LESSONS LEARNED

- When leaving experiments unattended, always leave a legible note nearby describing the experiment, your contact information (and that of the instructor or principal investigator), and what to do to shut down the experiment if something unexpected happens while you are not there. This form may be helpful.
- **Reactions that take place under pressure must always have safety pressure relief designed by a qualified party**. Relief design for reactors is more complicated than for most pressure vessels. Contact a qualified engineer for an appropriate design.
- If a serious incident occurs in your laboratory, **always** contact Security at 410-516-7777 for assistance after evacuating from any dangerous area. Know your lab's emergency procedures.

DISCUSSION QUESTIONS

1. What do we leave running unattended in our lab?
2. What hazards do those operations create? To other researchers in the lab? To support staff?
3. What would happen if there were a problem when were not there to monitor the experiment or apparatus?

Contact Dr. Dan Kuespert, Laboratory Safety Advocate,
at 410-516-5525 or dkuespert@jhu.edu for
more information about this JHU Safety Note.