

# INCIDENT – OAK RIDGE NATIONAL LABORATORY PRESSURE VESSEL FAILURE

---

On December 8, 2020, the Oak Ridge National Laboratory (ORNL) released a Lessons Learned Report on a pressure vessel failure event. This event, which occurred on February 7, 2020, resulted in an explosion and serious damage to a laboratory drying oven.

The following four factors were found to have contributed to the incident:

1. The hazard evaluation for this pressure vessel system did not cover all hazards of the experiment.
2. Many participants had not read the evaluation; they were not fully educated on the nature and hazards of this experiment.
3. The safe operating pressure of this vessel was very near the experimental operating pressure which led to an unacceptable margin of error. This, paired with the fact that the vessel did not have adequate pressure relief devices, created a dangerous situation.
4. Lastly, the drying oven had been modified in the past leading to it no longer accurately measuring the internal temperature. This meant that there was no assurance the oven would not exceed the temperature set point or shut off if the set point was exceeded.

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

# Not Rocket Science: A JHU Safety Note

---

## LESSONS LEARNED

---

- **Always** ensure experimental safety documents adequately identify, describe, and control all hazards. This documentation should be read by all participants **before** the experiment begins.
- Additional hazard review/analysis **must** be conducted if hazards change or evolve during an experiment.
- **Always** have a professional engineer review pressure-containing systems.
- **Always** know your individual system's pressure safety requirements.
- **Always** ensure adequate overpressure protection is incorporated into the pressure system in the form of a rupture disk or release valve.
- **Always** ensure that all equipment is being properly maintained and calibrated to allow for proper and safe functioning.

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