# Machine Failure Near Miss

Environmental Health & Safety

## What happened?

In this event, a researcher and a project scientist were testing electrical components of a vacuum tribometer that has been out of commission due to a missing vacuum pump, not for electrical reasons. They had a video from the purchase confirming all the electrical components worked. They were checking if an outlet in the machine was controlled by a switch on the master panel of the machine. They had checked the electrical schematics and were reasonably sure that a switch would do what they expected. The manual said in order to test this outlet they should turn the main power on, then flip the switch in question. When the main switch was flipped on, there was a loud pop and then a fair amount of smoke from the instrument. The machine was immediately unplugged. After it was determined there was no fire or reason to evacuate, nor any harm caused to personnel, they began investigating the cause of the smoke. They traced a burnt wire to an o-ring that also looked burnt. They believe that a metal component of a microswitch that was pressed against the o ring wore through the o-ring and came in contact with a metal plate, shorting the circuit and burning the o ring.

**What are the lessons learned?**

Thoroughly check all electrical components to ensure that all connections are in good condition throughout a piece of equipment, and replace any broken parts as needed.