

Date Sent: Mon, 03 Nov 1997 16:18:50 -0600  
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Subject: Lessons Learned- **Vacuum Pump Incident**

A researcher discovered that his vacuum pump wasn't working recently, and began investigating the cause. He found that the electrical plug end and the wall outlet had arced and melted, vaporizing one of the plug prongs. The circuit breaker for the outlet had not tripped. He tripped the breaker, and called Facilities Services to have the damaged equipment evaluated and repaired.

The following points were identified during the evaluation of this event. and are presented as a Lessons Learned. Please share this information with everyone that may use similar equipment.

1. The cord in question was an 18/3 cord, and was undersized for the load needed for the 3/4 hp motor on the vacuum pump.
2. The pump was turned on/off by plugging in the cord and unplugging it. This is sufficient for motors up to 1/3 hp, but the 3/4 hp motor needed to be controlled by a rated switch.
3. Inspection of the cord revealed cracking and melting that may have been present before this event, and gave evidence of the thermal challenge the cord was facing. This may have contributed to the equipment failure, and could have contributed to a fire or electrocution if conditions had degraded further.

Please inspect your workplace for the following conditions:

1. Electrical cords serving equipment above the rated capacity
2. Equipment routinely turned on/off by using the plug rather than a switch
3. Electrical cords showing signs of aging or insulation degradation, i.e. melting, cracking or discolorization
4. Evidence of carbon arcing on the wall outlet or plug prongs of electrical equipment.

If any of these conditions are present, or if you have further questions, please call Facilities Services at 4-3756, Engineering Services at 4-4823, or, where appropriate IPRT Facilities Engineering and Safety at 4-3626.