

Type of Incident: Property Damage
Business Unit: Buca Retail Remediation Site
Location of Incident: Storage Area
Date/Time: 28/05/09

An off-the-shelf portable compressor was installed at the depot of the Çiftçi Apartment in order to drive an air-operated pump that recovers contaminated groundwater, on February 16th 2009. A risk assessment was conducted prior to its installation, and the unit operated successfully for several months. The installed compressor was operated only during the day while the technician was on site.

On May 28th the compressor was started by the technician (a local subcontractor) at 10:00 am after daily routine checks. After starting the compressor, the technician started routine daily system monitoring studies on both onsite and offsite areas. The compressor ran automatically on an hourly basis and stopped at 12:10. At 13:00 the compressor started again and the site technician stayed in the compressor area until 13:40. At 14:15 the site technician had moved to a nearby onsite area to clean the plate aerator tank. At this point neighbors came to the site and warned the site technician about a plastic smell and smoke at the depot. The technician immediately unplugged the compressor and cooled it with a spray of water.

A later examination of the compressor suggested that the heat came from the electric motor, which caused over heating of the power connections and melted the plastic cover. Investigation established that the overheating was due to a failure in the compressor's check valve, which shut down the flow out of the motor. In addition, a thermal overload switch which should have shut down the compressor failed to do so. Electrical current fluctuations were also suspected as a contributing factor, but investigation after the fact found no major concerns.

When the compressor was originally installed the area was clear. However, the dealer started using this area for storing varying quantities of personal hygiene products (such as deodorants), auto perfumes, liquid hand sanitizers, baby clothes, and water storage tanks. It is not clear whether these items are flammable, but aerosol cans could explode in fire.

The compressor was brand new (purchased in February), and in fact new on the Turkish market. It was operated within its performance specifications and maintenance recommendations. The manufacturer has accepted responsibility for a design flaw.



Actual Outcome: The plastic hood of the compressor melted.

What Went Well?

- The site technician was nearby and moved quickly to isolate the compressor from its energy source and cool it down.
- There had been no fire in the depot, and the compressor was not in use near highly flammable items.
- Risk assessment was done on the use of the compressor and suitability for purpose prior to this incident.
- Daily controls were carried out before the work (water level in the tank, electrical connections, pressure lines and gauges).

What Went Wrong?

- Compound failure of check valve and thermal overload switch

Possible Immediate Causes:

6.3 Tool malfunction: Check valve and thermal overload switch.

Possible System Causes:

20.6 Purchasing, material handling & material control - Other: Purchased compressor was a new product without history in the field.

21.8 Tools & Plant/Equipment - Other: – Possible fluctuation in the public electrical supply

Corrective actions:

- Based on a review of potential risks following the incident, it has been agreed that this compressor would no longer be used on this site

Lessons Learned:

1. When purchasing off-the-shelf equipment, inquire about track record of safe use in the field, and consider both suitability for intended purpose and higher possibilities of failure in equipment designed for lighter use.
2. When using equipment which may not be designed for continuous operation, consider using the equipment only under supervision.
3. Risk assessments should consider the degree to which RM controls the area due to potential changes in room contents -- try to negotiate dedicated space or raise the risk profile.
4. Consider the use of a routine electrical check by a qualified electrician, when using portable off-the-shelf equipment.

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