

SAFETY ALERT-QC Laboratory

INCIDENT: Testing of "Particulate Contaminants in ATF", which involves filtration of about two litres of ATF through filtration apparatus was in progress at the QC laboratory. Suddenly there was a loud sound and the laboratory employee (performing the test) was engulfed in flames. The fire was extinguished with the help of fire extinguishers. The victim was taken to hospital with superficial burns. He succumbed to his injury after 8 days of treatment .



Filtration Assembly



Vacuum Pump



Crocodile clips

OBSERVATIONS: (a) Five nos. of crocodile clips were used for holding on to wired/ apparatus' body terminals for grounding. Few of the clips were having very small area of contact, leading to the possibility of getting detached. (b) Filtration sample of ATF was taken in one litre glass cylinder; SS feed container to be used as per SOP. (c) The vacuum pump used to maintain rate of filtration was of non FLP design and could have generated a spark. (d) There was a possibility **that** the vacuum pump was not effective in regulating the flow of fuel from funnel to receiving flask, thereby causing static charge generation. (e) The rubber sheet wrapped over Teflon holder had wear & tear and there was a possibility that while the filtration process was going on, ATF vapours were continuously escaping from the receiving bottle to the surrounding atmosphere and caught fire on receiving spark. (f) Risk Analysis for the tests performed in Laboratory has not been carried out, although tests were performed on routine basis.

ROOT CAUSE: The generation of static current (due to the apparently imperfect grounding of the apparatus) might have caused a spark leading to ATF catching fire in the receiving bottle. This resulted in an explosion due to which the filter funnel assembly comprising of steel filter funnel & Teflon holder were pushed out from the receiving bottle and the burning ATF splashed over the individual.

RECOMMENDATIONS:

- Earthing system for the test apparatus to be checked for healthiness and rectified if required.

- Recommended Standard apparatus should be used.
- Laboratory personnel should wear Personnel Protective equipment (PPE) such as Anti-Static Shoes, Fire retardant overalls etc.
- Risk assessment of all the test performed in laboratory should be carried out and necessary precautions should be incorporated in Operating procedures.

WORTH MENTION: Similar Incident: A laboratory worker picked up a container of trifluoroacetic acid with her un-gloved hand to move it elsewhere. She did not notice that there was a small amount of residue left in the glass. Several hours later, she experienced pain in the palm of her hand and the inside aspect of her thumb. The result was a serious burn that required skin grafting. She was not aware that this type of burn could result from handling trifluoroacetic acid.

Trifluoroacetic acid can form hydrofluoric acid upon contact with moisture. Hydrofluoric acid can cause deep burns that may not be painful for hours.

- Know the hazards of the chemicals involved before handling them.
- Always assume that containers are contaminated and wear appropriate gloves while handling.
- Keep a burn kit of hydrofluoric acid in the laboratory for prompt application.

(Source: <https://www.aiha.org>)

A MUST WATCH VIDEO FOR LABORATORY PERSONNEL

Experimenting with Danger

Click the link:

<https://www.youtube.com/watch?v=ALBWxGik64A>



This safety alert is based on the Investigation report submitted by industry and published for information purpose only.

Industry members are requested to post 'Safety alerts' in above format to Devendra Mahajan, Joint Director, OISD at mahajandm.oisd@gov.in to share across the Industry.