

Hot Work Activities – gas tests are vital but must be properly executed!

Part 2



No gas monitoring or improperly conducted gas testing accounts for many of the fatalities from hot work activities

1. A contractor died during hot work on a storage tank (Norwich, UK) Gas tests were carried out but the test equipment was not suitable for detecting toluene. The Safety Manager was unaware that that flammable gas detectors were better at detecting some gases than others
2. On a refinery two fires occurred during grinding. Gas tests had been taken before work started in both incidents but on investigation the gas detectors gave false zero readings
3. A fatality occurred when hot work started following a false conclusion that the work area was free of flammable vapour. A sample tube was being used and no flammable vapour reached the detector before the test was completed

On any given day, 1 in every 2,500 untested instruments will fail to respond to a dangerous concentration of gas. That could kill!

Hot Work Activities – key EXECUTION considerations

- Gas testers must be properly authorised through recognised training and refreshed every 3 years (min)
- Sample tubes must be used with care
- Gas tests must be carried out immediately before starting actual hot work activity (within 60mins) and repeated if there is a break in the work
- Gas test and gas monitoring equipment must be “bump” tested before use and ideally rechecked after on-site tests
- Continuous gas analysis should be specified for hot work inside confined spaces and when hydrocarbons are <25m away
- Never trust the drains !



Inadequate gas testing can kill !

Notes:

- Different types of sensors are used for gas detection (infrared, catalytic bead, PID, and electrochemical)
- The choice of sensor depends on:
 - *gas to be detected*
 - *expected range of concentration*
 - *presence of other gases that may affect readings or damage the sensor.*
- Chemicals and vapours from solvents, lubricants and other specialized chemicals can all act as sensor poisons or inhibitors to different sensor types
- Need to consider aspirating or non-aspirating detectors to ensure representative samples taken
- Special equipment required for testing for hydrocarbons in inert atmospheres
- Before / after use “bump” tests should be tested using the gas to be measured. When not possible another gas mixture should be used which gives a similar detector response to the target gas(es)

