Testing recommendations for gas monitoring instrumentation

Question: How often should gas monitoring instruments be tested and calibrated?

Responding to this month's question is Matt Thiel, general product manager, Industrial Scientific Corp., Oakdale, PA.

Answer: Gas monitoring instrumentation should be treated like any other piece of lifesaving equipment – it should be tested and calibrated on a regular basis. The safest approach to testing gas monitors is to function test or "bump" test them prior to each day's use. A function test consists of exposing each sensor in the gas monitor to a known concentration of gas in excess of the lowest alarm set-point. The instrument should respond to the gas concentration by going into alarm. If the sensors do not respond to the applied gas, the instrument should be calibrated before it is used. Testing frequency is best determined by company policies, or local regulations that may mandate specific testing intervals.

Instrument calibration is just as important as testing. Calibration has become a very simple – sometimes automated – process that consists of exposing the instrument sensors to a known concentration of gas, and making appropriate response adjustments to ensure the instrument is reading accurately. Typically, the instrument makes these adjustments automatically without user intervention. Calibration should be performed every 30 days. Company policy or local regulatory agencies may dictate fewer or more frequent calibrations.

One thing to consider when it comes to testing and calibrating gas monitoring equipment is instrument use and abuse experienced in the field. These instruments are used in some of the harshest and dirtiest workplace conditions, so sensors easily can become damaged or blocked by dirt and debris. If gas cannot diffuse into the sensor, the sensor will not respond to the gas. Visual inspection alone cannot detect blocked sensors, only function testing guarantees the sensor can still detect gas.

Gas exposure is another field condition that can affect frequency of testing and calibration. Sensors can become damaged due to exposure to certain gases. These gases, in either high or low concentrations, could damage the electrodes or prevent the sensing elements from working properly. Calibration is needed to readjust the instrument's accuracy after such an exposure occurs. For catalytic combustible sensors, function testing is a method of burning off some of the inhibitive materials that could build up on the sensor's pellistor.

Operator use is the final element in determining calibration and bump testing. Each individual uses instruments differently. One operator may take extreme care of the instrument, while another may abuse it. When gas monitors experience high levels of shock or abuse, they should be tested and calibrated more frequently to ensure the sensor's integrity.

Testing and calibration are standard maintenance items for all gas monitors. They should not be taken lightly or ignored. A number of different regulatory agencies make recommendations for the frequency and methods of testing and calibration. Local regulations should be reviewed to ensure they are being met. All of these regulations and standards are put in place for one reason: worker safety. Worker safety should be the No. 1 priority when establishing testing and calibration procedures. Ask yourself if you would risk your life, or the life of one of your workers, by using a monitor that has not been tested or calibrated. **S+H**

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