



WEYMOUTH FIRE DEPARTMENT	STANDARD OPERATING PROCEDURE	41
DATE OF ISSUE: January 30, 2017	SUBJECT: Four-Gas Meter Operation	REV:1
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1.0 SCOPE:

This guideline briefly summarizes use and operation of the RAE Systems; QRAE 3 Personal Four-Gas Monitors. The QRAE 3 is a multi-threat gas detector that combines continuous monitoring capabilities for toxic and combustible gases. The QRAE 3 monitors in use are pumped (on C-2) and diffusion versions (all apparatus) equipped with field-replaceable electrochemical and combustible sensors.

2.0 PURPOSE:

These monitors shall be used by members of the Weymouth Fire Department (WFD) for emergency response to a variety of responses from carbon monoxide (CO) to natural gas and propane gas incidents as well as investigating oxygen deficient atmospheres. This guidance will serve to inform members of proper use and care of the QRAE 3 Monitor.

3.0 RESPONSES:

It is important to remember that all Four-Gas Monitors require a warm-up time of one minute. When responding to incidents that of such a nature that use of a gas monitor may be warranted, such as a CO alarm, gas odor or leak or reported smell or sight of smoke, one member from each crew shall be responsible for starting up and bringing the monitor to investigate the response.

3.1 Lower Explosive Level (LEL)

The Four-Gas Monitors carried on WFD apparatus have LEL combustible gas indicators calibrated to sound an audible alarm at a reading of 10% LEL which equates to a level of 0.5% natural gas. If an LEL alarms or reads 10% at any time in the FREE AIR (unconfined area) in any part of a building, evacuate the building. If the gas being measured is other than natural gas (methane), the monitor has a gas library that can be accessed and determine the LEL for several gases but choosing one from the menu. Be sure that you have been trained in this operation before attempting.

3.2 Carbon Monoxide (CO)

The Four-Gas Monitors have CO indicators to sound an audible alarm at a low of 35 parts per million (ppm) CO and a high level of 200 ppm.

3.3 Hydrogen Sulfide (H₂S)

The Four-Gas Monitors have H₂S indicators to sound an audible alarm at 10 ppm and a high of 20 ppm at which level, evacuation is necessary.

3.4 Percent Oxygen (%O₂)

The Four-Gas Monitors have %O₂ indicators to sound an audible alarm at an oxygen deficient atmosphere. The low alarm sounds at 19.5% O₂ and the high sounds at 23.5% O₂. Levels below 19.5% required ventilation and/or use of an SCBA.

3.5 Chlorine (Cl₂) and Hydrogen Cyanide (HCN)

In addition to the Four-Gas Monitors, C-2 carries an additional QRAE monitor to measure Cl₂ and HCN which has a low alarm of 4.7 ppm and a high of 25 ppm and can be called upon for use as needed.

4.0 CALIBRATION:

The Four-Gas Monitors are calibrated by the Training Division as needed. They are set to require re-calibration every 45 days. Occasionally, the monitor will indicate the need for re-calibration by flashing LEDs on the display. At this time, the monitor is still functioning and will provide accurate readings. In the event that this is occurring, notify the Training Division and the monitor will be calibrated or swapped for a spare until calibration can be performed such as during a weekend or holiday.

5.0 STORAGE AND CARE:

The Four-Gas Monitors have mounted brackets on all apparatus where each unit is stored and is under continuous charge. In the event that the bracket malfunctions or is damaged, notify the Training Division and a smaller AC charger will be provided. The Four-Gas Monitors are NOT water-proof and therefore care should be taken during use in wet areas.

Attachment: QRAE 3 User's Guide