

The Dangers of GAS DETECTION IN COLD WEATHER

By Analisa Harangozo

For people in North America, especially the northern regions, this time of year marks a shift in weather and working conditions. When leaves start changing colors, people start to gather firewood and homeowners begin winterizing because they know what the temperatures will soon be.

In some parts of North America, temperatures can dip far below 0 °F. Cold temperatures can be unpleasant and inconvenient for people at the best of times, but for natural gas employees, these temperatures can present a real danger for a long time. In some areas of the world, cold temperatures can persist for 6 to 8 months. Portable gas detectors have a lower operating temperature of -4 °F (-20 °C), which can be challenging for natural gas employees who work outside in colder conditions. It is impossible to accurately detect gas leaks or assess air quality in weather conditions that are below the equipment's operational rating, and employees should be cautious in those conditions.

Wyoming Natural Gas Explosion

One North American natural gas field was the site of a cold weather tragedy on Nov. 22, 2013. It was a cold morning in Wyoming, and five natural gas employees were performing their work as usual. At 10:15 a.m., the workers began welding repairs on a condensate tank. They completed a prejob safety analysis, got a signed work permit and took a lower explosive

limit reading with a calibrated monitor. But a spark ignited gas vapors in the piping and caused an explosion. Four of the five workers were hospitalized and the fire could not be extinguished until 1 p.m.

While the workers did everything correctly given their work and equipment readings, the conditions just were not right for their gas detection equipment. Even though their equipment readings suggested that it was okay to begin working, the atmosphere was too combustible and explosive to consider welding there. The temperature was below the rating of their detection equipment by 9 °F, with a recorded temperature of -6 °F and a wind-chill of -13 °F or lower. At temperatures that low, the workers' gear would not function, and they had no way of being certain of the gas levels despite the levels being far too high for safely welding.

Gas Detection in Cold Weather

Accurate gas detection readings in cold weather can mean the difference between life and death. Even under optimal conditions, workers cannot rely on their sense of smell or sight to detect gas hazards. Inaccurate gas detection readings can result

in workers being exposed to dangerously toxic or oxygen-deficient atmospheres and becoming ill. Flammable gases like the ones in Wyoming can also result in deadly explosions if they are not detected or planned for.

In general, if it is too cold to stand outside and work for a long time, it is also too cold for the gas detection instrument. Portable gas detectors can be used at lower temperatures for intermittent periods but be mindful that at the -4 °F mark the instrument will become sluggish, and the display could become dim or go blank if frozen. Battery run time is also reduced, sometimes by as much as 30% or 40%.

Before the season gets really cold, start winterizing gas detection equipment. Make sure the unit's case and exterior are intact, and dirty or damaged filters are replaced. Always check the instrument battery before going out to work and charge the battery in temperatures between 32 °F and 122 °F. Store detectors in a humidified area when not using them to prevent the aqueous electrolytes from drying out. If a sluggish instrument with a dim display must be used, bump test it before each use to make sure it is responding. Keep the instrument inside your coat and the tubing near the collar around your nose and mouth to keep it warm with body heat. When using monitors outside for more than 20 minutes, let them stabilize at the ambient temperature for 15 to 20 minutes before using, and zero the sensors in fresh air.

Gas detection equipment can save lives and reduce the risk of incidents on work sites, but only when working in optimal conditions. Be aware of the limitations of equipment and the environment you are working in, especially when working in cold weather. **PSJ**

Analisa Harangozo is a marketing communications manager for PK Safety. Operating since 1947, PK Safety is a supplier of occupational safety and personal protective equipment and takes OSHA, ANSI, PPE and CSA work safety equipment seriously.

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