



- [PPE](#)
- [Height](#)
- [Handling](#)
- [Drug & alcohol](#)
- [Hazardous Areas](#)
- [Machinery](#)
- [Fire](#)
- [Electrical](#)
- [Compliance](#)

-
-
-
-
-
-

-
- [The Magazine](#)
- [Event Calendar](#)
- [Resources](#)
- [Products](#)
- [About Us](#)
- [Directory](#)

A 'close shave' in New Zealand - confined spaces and CO₂

[MSA Australia Pty Ltd](#)

By Safety Solutions Staff
Wednesday, 04 May, 2011



BPO Ltd of Hamilton, New Zealand, environmental consultants, purchased a confined space harness, rig and gas detector back in 2001 because it was a requirement of one of their clients. The company undertook confined space training to the AS/NZS standards for the same reason. BPO saw the equipment and procedures more as a competitive edge rather than as a necessity and, for this reason, always followed the procedures and used the equipment. The equipment was always looked after and inspection certificates were kept current. At the time, many companies regarded the whole confined space thing as a bit of an overreaction to the Aquatec disaster in Auckland.

Recently, however, they were working on a site with fermentation vessels. The job was to climb down a 2.5 m manhole and inspect the flow measurement equipment in the bottom of the manhole. They went through the normal preliminary checks of taking the gas detector down to various levels and the readings were all normal. One worker, Geoff, was bigger than the other, Greg, so Greg went down the hole and Geoff became the safety observer.

Greg was already harnessed up so, as soon as the preliminary checks were complete, he clipped himself to the confined space rig and climbed down into the hole. Greg had only been in the work space for a couple of minutes when a flush from a fermenter came down the drain. The site was quite noisy so Geoff couldn't hear the gas detector alarming but he could see the lights on the detector flashing. He called out to Greg for about 10 seconds but got no answer. At this point, the training took over and Greg was winched out of the manhole in a not-too-gentle fashion. Once on the surface, it became apparent that this was none too soon. Greg was only semiconscious.

Greg only took a short time to recover. In the meantime, Geoff checked the peaks on the gas detector. The O₂ level had dropped from its normal 20.8% to about 15%. When the fermenter flushed out, it flushed the CO₂ with it.

Greg said afterwards that shortly after the flush came through, he suddenly couldn't get his brain to work. He could hear the alarm going off but he couldn't remember what it was for. He couldn't even figure out what he was doing in this manhole. Then, when he felt the winch start to haul him up he was almost grumpy because someone was disturbing his sleep.

Since this event, BPO has taken confined space entry very seriously. It now has two rigs, three MSA Altair gas detectors, two fan units for air displacement and all staff have regular training. It has also had two more events where staff have been hauled out of the work space although these were minor in comparison to the event above.

John Spokes of MSA Australia has provided some facts regarding this case. "Carbon dioxide (CO₂) is predominantly the by-product of fermentation and/or bacterial activity. It is colourless and essentially odourless. At 0.5% of atmosphere it is considered chronically toxic. At 6% CO₂ impairs mental capacity and at 10% it is mostly fatal.

"A 6% replacement of air by CO₂ reduces O₂ levels to 19.6% which may not trigger an alarm.

"The observed alarm indicates the CO₂ level may have reached 28%. Without a rescue system in place and quick action, death would have occurred.

"The additional benefit of a mandown alarm to detect an unconscious worker in these circumstances is invaluable."

“CO₂ should be detected directly using accurate, fast CO₂ sensors - a fact laboured in the Australian and New Zealand standards.”



0 Comments

Safety Solutions

 Login ▾

 Recommend

 Share

Sort by Best ▾



Start the discussion...

Be the first to comment.

 Subscribe

 Add Disqus to your site

 Privacy

Related Articles

[Minimising the risk of fire in confined spaces](#)

Confined spaces are some of the most dangerous environments to work in. The risk of entrapment...

[Technical bulletin: MSA XCell Pulse technology - pulse check](#)

The bulletin contains a general description on how the MSA's gas detectors with XCell Pulse...

[Drone used to monitor emissions](#)

Taking advantage of methane that would otherwise escape into the atmosphere provides Australian...

[Resources](#)

- [Drug and alcohol policies must be a safety issue](#)

 - [Do your protective gloves comply with safety standards?](#)

 - [Safety Lifecycle Workbook](#)

 - [Latest technology for reducing the time and cost of daily bump testing](#)

 - [Reliable and inexpensive safety shower monitoring](#)

-

Events

- [Comms Connect Brisbane](#)

 - [Certified Machinery Safety Expert course](#)

 - [ACI Connect 2015](#)

 - [The Industry Tech Golf Day 2015](#)

 - [25th Mechanical Engineering Safety Seminar 2015](#)

-

Are you interested in joining any of our other professional channels?

- [Electrical, Comms & Data Contracting](#)
- [Electronics Design & Engineering](#)
- [Food Manufacturing & Technology](#)
- [Laboratory Technology](#)
- [Life Science & Biotechnology](#)
- [Process Control & Automation](#)
- [Radio Communications](#)
- [Industrial Safety](#)
- [Sustainability - Industry & government](#)
- [IT Management](#)
- [Pool + Spa Review](#)
- [Field Service Business](#)

Contact Information

Locked Bag 1289
Wahroonga NSW 2076
Phone: +612 9487 2700
Fax: +612 9489 1265
ABN: 22 152 305 336
hello@safetysolutions.net.au

Connect with us



Subscribe to Safety Solutions

Our Safety Solutions magazine and website provide busy industrial, construction and mining safety professionals with an easy-to-use, readily available source of information that is crucial to gaining valuable industry insight. Members have access to thousands of informative items across a range of media channels.

[SUBSCRIBE](#)

Membership is FREE to qualified industry professionals across Australia.

- [About Us](#)
- [Contact Us](#)
- [Advertising](#)
- [RSS Feeds](#)

- [Privacy](#)
- [Terms](#)
- [Sitemap](#)

- All content Copyright © 2015 Westwick-Farrow Pty Ltd