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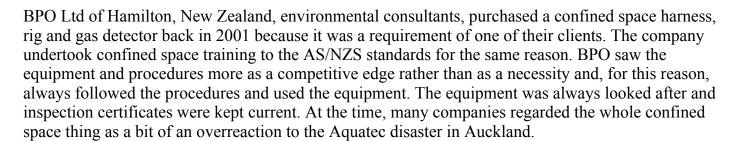
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A 'close shave' in New Zealand - confined spaces and CO_2

MSA Australia Pty Ltd

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By Safety Solutions Staff Wednesday, 04 May, 2011



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 was 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 O_2 level had dropped from its normal 20.8% to about 15%. When the fermenter flushed out, it flushed the CO_2 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.

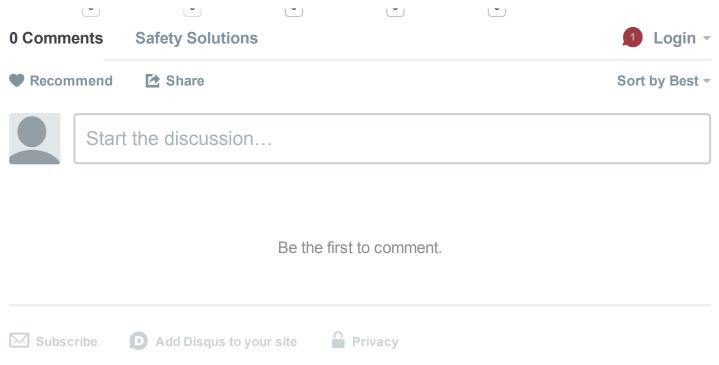
John Spokes of MSA Australia has provided some facts regarding this case. "Carbon dioxide (CO₂) is predominantly the by-product of fermentation and/or bacterial activity. It is colourless and essentially odourless. At 0.5% of atmosphere it is considered chronically toxic. At 6% CO₂ impairs mental capacity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



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