

WEEKLY SAFETY TIP - 2/8/10 - O2 IS 19.5%. IS THAT ALL?

Your crew is preparing to enter a confined space. You grab your monitor and check for Oxygen levels. The monitor tells you there is 19.5 % Oxygen in the space. That's OSHA's acceptable minimum level. Is that okay? Can the crew enter now? What else should you think about?

Here's another question you might want to consider. If the Oxygen level is only 19.5 % and not at the level considered normal - 20.9% - what else might be in the atmosphere within that space? Why is it only 19.5? There is a chance that, if the Oxygen level in a confined space is only 19.5 % and not 20.9 %, the missing 1.4 % has been replaced by another gas. Here's are just a few other gases commonly found in confined spaces:

Carbon Dioxide (CO2). This odorless, colorless gas is commonly present in our atmosphere at 387 parts per million (ppm). An asphyxiant, this gas can literally take your breath away in a bad way. And when only 1% of the atmosphere in a space, it can make you sleepy, reducing your chances of getting out safely. Additionally, most people are completely unaware that CO2 is one of the few inert gases that has a Permissible Exposure Limit (PEL). Yes, the PEL is 5,000 ppm making it possible that you could have almost three times that amount in an atmosphere with 19.5% Oxygen.

Hydrogen Sulfide (H2S). A frequent byproduct of decay and commonly found in petroleum products, this gas is known for its' odor of rotten eggs, but only for a little while. After a brief exposure, this gas can paralyze your sense of smell, giving you a false sense of security. It is also very toxic and highly flammable.

Methane (CH4). Another colorless, odorless gas, it is one of the major components of natural gas. In addition to being highly flammable, it can form explosive mixtures with air. And like Carbon Monoxide, it's an asphyxiant. It's not what you want to ignore in any confined space where you are working.

These are just a few of the gases that can displace the Oxygen you need. There are too many to list in this short safety tip. However, it is important for you to know that OSHA gives precise testing and monitoring requirements in 29 CFR 1910.146 (d)(5)(ii) and (iii), which state: *"Test or monitor the permit space as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations; and when testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors."* Follow the link to read the regulation here: 29 CFR 1910.146: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9797

If you have any questions or comments regarding confined spaces, send us a note to info@scm-safety.com. If you need training on confined space entry, we have an online course at [hazmatschool.com](http://www.hazmatschool.com). Follow this link to read more about it. Confined Space Course 1289. http://www.hazmatschool.com/descriptions/CONFINED_1289_information.html