Nitrous Oxide – FAQ Sheet

Background

Nitrous oxide (N2O) is a clear, colorless, oxidizing liquefied gas with a slightly sweet odor. The product is stable at room temperature. While classified by the U. S. Department of Transportation (DOT) as a nonflammable gas, nitrous oxide will support combustion and can detonate at temperatures in excess of 650 °C (1202 °F).

What Are the Dangers?

Effects of nitrous oxide on the human body
Nitrous oxide's painkilling and numbing qualities begin to take effect when the gas is inhaled at concentrations of 10 percent. At increasingly higher concentrations, a sense of well-being, or "high," is experienced. A person experiencing a nitrous oxide high could:

- Have slurred speech
- Have difficulty in maintaining his or her balance or walking
- Be slow to respond to questions
- Be immune to any stimulus such as pain, loud noises, and speech
- Lapse into unconsciousness
- Nitrous oxide that is inhaled over a long period of time can lead to a vitamin B12 deficiency. When the level of vitamin B12 in the body is reduced, the red blood cell count is lowered, anemia results, and nerves degenerate. A vitamin B12 deficiency causes a person to; have painful sensations in the arms or legs; have an unsteady walk or gait; become unbalanced and tend to fall over; feel or appear to be irritable; suffer intellectual deterioration.

Nitrous Oxide readily displaces air, causing asphyxiation. A person who is rendered unconscious by nitrous oxide is likely to stop breathing within a few seconds as a result of a depressed central nervous system--brain, brain stem, and spinal cord. Depression is caused by a combination of the effects of nitrous oxide and the lowered oxygen content that occurs as pure nitrous oxide displaces oxygen from the lungs with each succeeding inhalation of the gas; i.e., the person is asphyxiated.

Tragedy can occur very quickly. Long-term exposure (several minutes) is not necessary before death occurs. Sudden, prolonged exposure to high levels of nitrous oxide, or a series of inhalations (without breathing clean air between inhalations) can result in death. The length of this action can be measured in seconds. Since the narcotic effect of nitrous oxide is very brief (several seconds) abusers tend to follow this repetitive action pattern.

Additional FAQs

- The substance disrupts learning ability. In a typical experiment volunteers who inhaled a low dose of the drug showed worsened reaction time, worsened ability to do arithmetic, and general sedation accompanied by nervous system depression (as opposed to stimulation).
- Interference with driving ability has been noted one-half hour after a dose.
- Short-term exposure can cause dizziness, nausea, vomiting, and breathing difficulty.
- Some recreational users quickly inhale as much nitrous oxide as possible and hold their breath. This technique causes a sudden change of pressure inside the lungs and can rupture small interior structures needed for breathing.
- Blood pressure can go up or down, depending on dosage. Users can lose consciousness, which may be hazardous in a recreational context due to falls or inability to shut off the gas source.
- The substance deactivates vitamin B12, an effect that can cause numbness and difficulty in moving arms and legs.
- Other results can be impotence and involuntary discharge of urine and feces.
- Nitrous oxide interferes with blood clotting, and long-term exposure has caused blood abnormalities.
- Persons with chronic industrial exposure have more kidney and liver disease than usual.
- Nitrous oxide can become very cold when released as a gas from a pressurized container, cold enough to cause frostbite upon meeting skin or throat.
- Breathing nitrous oxide without an adequate supply of oxygen can be fatal; a little in a closed space or a lot from a face mask can suffocate a user.
- Although nitrous oxide is called nonflammable, when inhaled it can seep into the abdominal cavity and bowels, mixing with body gases to create a flammable combination. If ignited the result would be like setting off an explosive inside the body; the danger is real enough that surgical personnel administering nitrous oxide as an anesthetic have been warned about it.

For more information on nitrous oxide and other gases, visit the Compressed Gas Association's website at http://www.cganet.com/.