

NITROUS OXIDE – SAFETY INFORMATION

Dangers of Inhalation

General

At room temperature, nitrous oxide is a colourless non-flammable gas, with a slight metallic scent and taste.

Health Effects

Elevated concentrations of this gas in the air can be reached quickly on loss of containment, for example, via leaks and venting. The short-term health effect is primarily the narcotic effect, which includes dizziness, nausea, headache, and loss of coordination. In addition, gaseous nitrous oxide is heavier than air and can be found in greater concentrations at low levels; and therefore, if allowed to displace oxygen in a confined space, can also be an asphyxiation hazard.

Nitrous oxide liquid or cold vapour coming in contact with the skin or mouth can cause freezing or frostbite. If frostbite has occurred, obtain medical attention.

Nitrous oxide has been associated with several side effects from long-term exposure. The most strongly substantiated effect is neuropathy. Epidemiological studies also suggest fetotoxic effects and higher incidents of spontaneous abortion in exposed personnel.

Uses

Nitrous oxide is a colourless gas that is commonly used as a general anaesthetic in both medical and dental surgeries. It is also used:

- as gas propellant for aerosols packaging;
- as a combustive for the flame in atomic absorption spectrophotometry;
- in the automotive industry to enhance engine performance;
- in calibration gas mixtures for petrochemical industry, environmental emission monitoring; industrial hygiene monitors and trace impurity analysers.

Dangers of inhalation

Nitrous oxide readily displaces air, causing asphyxiation.

Pure nitrous oxide will cause asphyxiation, resulting ultimately in respiratory arrest. Nitrous oxide is blended with oxygen when used in anaesthesia applications.

Nitrous oxide is frequently subject to inhalation abuse, sometimes resulting in the health effects described above.

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, anaemia 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.

Safety Concern

ANZIGA is concerned that this abuse of gas continues and appears to be treated with little concern from those responsible.

The risks and effects of inhalation should be promoted, and greater attention paid to restricting access.

Controls

Nitrous oxide has many legitimate uses and is an essential product for many applications. Medical grade nitrous oxide is controlled by the Therapeutic Goods administration through the Scheduling of medicines & poisons. This places regulatory control over its availability, distribution and storage. (<https://www.legislation.gov.au/Details/F2019L01471>)

Security for all nitrous oxide products is a growing concern because it is frequently subject to inhalation abuse. Stricter methods to control access, including increased security on production sites, should be considered.

A policy for the sale of nitrous oxide should also be considered. It should be ensured by a thorough review before the purchase is approved and the delivery is made that the customer has a valid reason to purchase nitrous oxide. Appropriate records should always be maintained.

Nitrous oxide has a multitude of beneficial applications such as an anaesthetic or as a food propellant that ultimately improves the quality of people's lives. When misused, abused, or handled improperly it can harm people, and potentially cause death. ANZIGA members are concerned about the growing inappropriate use of this product.

It should be noted that ANZIGA members DO NOT distribute or fill the small nitrous gas cartridges, that are predominately used for food preparation.

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