

Nitrous Oxide

Long-term use can brain and nerve damage, as well as depression or psychosis.

<https://accessmedicine.mhmedical.com/content.aspx?bookid=391§ionid=42069930>

Nitrous oxide, or laughing gas, is used as an adjuvant for general anesthesia, an anesthetic and analgesic agent for minor procedures, and a propellant in many commercial products, such as whipped cream and cooking oil spray. (“Whippets” are small cartridges of nitrous oxide that can be purchased at restaurant supply stores, grocery convenience stores, and “head shops.”) Nitrous oxide is used by many US dentists, in some cases without adequate scavenging equipment. Abuse of nitrous oxide is not uncommon in the medical and dental professions.

I. **Mechanism of toxicity**

- A. **Acute toxicity** after exposure to nitrous oxide is caused mainly by asphyxia if adequate oxygen is not supplied with the gas.
- B. **Chronic toxicity** to the hematologic and nervous systems results from inactivation of vitamin B₁₂ after irreversible oxidation of its cobalt atom. Vitamin B₁₂ is required for the synthesis of methionine from homocysteine and for the production of tetrahydrofolate. Methionine is essential for myelin production, and tetrahydrofolate is essential for DNA synthesis. Use of nitrous oxide can precipitate neurologic symptoms in patients with subclinical vitamin B₁₂ or folic acid deficiency.
- C. **Adverse reproductive** outcomes have been reported in workers chronically exposed to nitrous oxide.

- II. **Toxic dose.** The toxic dose is not established. Chronic occupational exposure to nitrous oxide at 2000 ppm produced asymptomatic but measurable depression of vitamin B₁₂ in dentists. The ACGIH-

recommended workplace exposure limit (TLV-TWA) is 50 ppm (90 mg/m³) as an 8-hour time-weighted average.

III. **Clinical presentation**

- A. Signs of **acute toxicity** are related to **asphyxia** and include headache, dizziness, confusion, syncope, seizures, and cardiac arrhythmias. Interstitial emphysema and pneumomediastinum have been reported after forceful inhalation from a pressurized whipped cream dispenser.
- B. **Chronic nitrous oxide abuse** may produce megaloblastic anemia, thrombocytopenia, leukopenia, peripheral neuropathy (especially posterior column findings), and myelopathy, similar to the effects of vitamin B₁₂ deficiency.

IV. **Diagnosis** is based on a history of exposure and clinical presentation (eg, evidence of asphyxia and an empty can or tank). It also should be considered in a patient with manifestations suggesting chronic vitamin B₁₂ deficiency but with normal vitamin B₁₂ levels.

- A. **Specific levels.** Specific levels are not generally available and are unreliable owing to off-gassing.
- B. **Other useful laboratory studies** include CBC with manual differential, vitamin B₁₂, folic acid, nerve conduction studies, and magnetic resonance imaging (MRI) if the patient has neuropathy. Elevated homocysteine and methylmalonic acid levels have been documented in nitrous oxide abusers who had normal vitamin B₁₂ levels.

V. **Treatment**

- A. **Emergency and supportive measures**
 1. Maintain an open airway and assist ventilation if necessary (See [Airway](#) and [Breathing](#)). Administer high-flow supplemental oxygen.
 2. After significant asphyxia, anticipate and treat coma (See [Coma and stupor](#)), seizures (See [Seizures](#)), and cardiac arrhythmias (See [QRS interval prolongation](#), [Tachycardia](#), and [Ventricular dysrhythmias](#)).

- B. **Specific drugs and antidotes.** Chronic effects may resolve over 2–3 months after discontinuation of exposure. Vitamin B₁₂ and folic acid supplementation is indicated to correct ...

VI. WHAT ARE NANGS?

Nangs are nitrous oxide canisters and they can be found in convenience stores for as little as ten cans for \$10.

Typically the drug is used for sedation and pain relief but more people are using it to get high.

Users experience symptoms such as dizziness, euphoria, uncontrollable laughter and giddiness.

However, people can also die from using nangs as too much can cause a heart attack.

Long-term use can cause depression or psychosis.

There is no current evidence demonstrating that mixing nitrous oxide with other substances increases health risks,' the Alcohol and Drug Foundation's website said.

'However, it is possible that combining the gas with stimulants and other drugs places additional pressure on the heart, increases blood pressure and may disrupt heart rate.'

Is nitrous oxide a problem for you?

[GET HELP](#)

What is nitrous oxide?

Commonly known as 'laughing gas' nitrous oxide is a colourless non-flammable gas that is generally used for sedation and pain relief.

It is also sometimes referred to as an inhalant or a volatile substance.

Inhalants are central nervous system (CNS) depressants. This means they slow down the workings of the brain, particularly breathing and heart.

<https://yourroom.health.nsw.gov.au/a-z-of-drugs/Pages/nitrous-oxide.aspx>