Government of **Western Australia**
Mental Health Commission

Nitrous Oxide

This resource has been developed for services who may see clients who use nitrous oxide for the purpose of intoxication. It aims to develop the services' understanding of the harms associated with nitrous oxide and provide harm reduction strategies for people who use nitrous oxide. It is not intended to be circulated to the public.

Street names

Nangs, Nitrous, Whippets, Balloons, Bulbs, Laughing gas, NOS, Nitro.

What is nitrous oxide?

Nitrous oxide is a colourless, odourless gas that is used in combination with oxygen in medical and dental settings for anaesthesia, as a propellant for whipped cream and in the automotive industry to enhance engine performance.

It has a long history of recreational use due to the euphoric feeling it provides when inhaled.

Nitrous oxide is a depressant, which means it slows down the functioning of the brain and body.

Immediate effects

- initial 'rush' or high
- euphoria
- giggling and laughing
- altered mood
- numbness and tingling sensation i.e. 'jelly legs'
- dizziness and/or light-headedness
- drowsiness/sedation
- reduced inhibitions
- impaired judgement
- headaches
- blurred vision
- confusion
- sweating
- muscular weakness
- nausea
- drop in blood pressure
- fainting

Harms associated with high volume and/or high frequency use

- numbness and tingling in the hands or feet when not using
- poor balance and coordination
- memory loss
- permanent brain and spinal cord damage (reversible if identified and treated early)
- incontinence
- anaemia
- limb spasms
- potential birth defects (if consumed during pregnancy)
- weakened immune system
- disruption to reproductive systems
- psychological disturbances

Factors that further increase risk of harm

- High volume and/or high frequency use can significantly increase the risk of long-term harms.
- A predisposition to vitamin B12 deficiency:
  - Vegans/vegetarians – as vitamin B12 is naturally occurring in animal products, those who do not consume animal products will be at greater risk for low vitamin B12 levels.
  - Pre-existing low vitamin B12 levels from other causes e.g., pernicious anaemia, coeliac disease, Crohn's disease.
- Use with alcohol and other drugs – using in conjunction with alcohol and other drugs can increase the risk of loss of consciousness, suffocating or choking on vomit.

Legislation

Nitrous oxide for non therapeutic (medical) use is scheduled in the national Poisons Standard as a Schedule 6 (S6) poison. Wholesale and retail suppliers are only able to legally sell S6 nitrous oxide if:

- the purchaser is aged 16 years or older;
- products are labelled and packaged as a 'poison' with the following warning statements: "Do not intentionally inhale contents" and "WARNING – May cause irreversible nerve damage if inhaled".

In response to the harms caused through increased availability and use of nitrous oxide, the Western Australian Government will be introducing further regulatory supply controls in 2024.

Why has the focus on nitrous oxide increased?

There is a misconception among people who use nitrous oxide that it provides a 'safe high'.

In recent years there has been a trend of high volume and increased frequency of use. Information is still emerging on the harms associated with nitrous oxide use but it is clear that high volume and/or high frequency use causes serious harm and lifelong effects.

How is it used?

Nitrous oxide is typically inhaled from:

- a nitrous oxide gas bulb (8g) with a nang cracker which dispenses the gas into a balloon, or from a whipped cream dispenser
- a nitrous oxide cylinder or tank, via a nozzle, regulator; or breathing mask.

Nitrous oxide used in the automotive industry is mixed with sulphur dioxide to deter inhalation due to its strong smell and irritation caused to the respiratory tract, eyes, mucous membranes and skin.

How does it work?

After nitrous oxide is inhaled, it is absorbed quickly into the bloodstream through the lungs, then travels to the brain and the rest of the body. Effects typically last for a few minutes.

Key takeaways

The following are the key messages to be imparted to clients who are using nitrous oxide for the purpose of intoxication.

- Heavy, prolonged use of nitrous oxide causes damage to the spinal cord. This is reversible if identified and treated early.
- How and where a person uses nitrous oxide puts them at risk of immediate harm.
- Unless used under medical supervision, there is no known 'safe' amount to use.
- Early intervention is highly encouraged.
- Oral vitamin B12 supplements will not reduce the risk of harm.

If someone is experiencing numbness or tingling in hands or feet when not intoxicated/under influence **SEEK MEDICAL ATTENTION**

If you are concerned about another person's mental health issues and/or alcohol and other drug use, contact 1800here4u (1800 437 348)

Harms and strategies to reduce harm

The safest way to avoid harm associated with nitrous oxide is not to use nitrous oxide. If someone persists in using nitrous oxide, the following safety tips may reduce the risk of harm.

Hypoxia (lack of oxygen)

Canisters of nitrous oxide contain 100% nitrous oxide gas, which means during inhalation you don't breathe in any oxygen. This can starve the brain of oxygen and be fatal.

Inhaling nitrous oxide in an enclosed space or environment with limited oxygen (e.g., in a car with the windows up), increases the risk of hypoxia or suffocation. Continuous inhalation without breaks will limit the amount of oxygen coming into the body and also increase the risk of hypoxia.

- Avoid using in enclosed spaces.
- Avoid putting plastic bags over your head or restricting your breathing.
- Avoid continuously inhaling.

Cold burns to skin e.g., on face, hands or body

When nitrous oxide releases from its cannister (bulb, cylinder or tank), the cannister can become freezing cold and can burn the skin. As nitrous oxide intoxication may cause numbness in the body, the cold burn may not be felt immediately, which may result in a more severe burn.

- Avoid direct contact with skin.

Increased vulnerability e.g., risk of assault

Nitrous oxide intoxication can cause disorientation and a lack of awareness of surroundings, making you more vulnerable to your environment.

- Avoid using alone or tell someone you are going to use and where you will be.

Damage to the lungs

Nitrous oxide is stored under extreme pressure in canisters. When released, the gas comes out at high pressure and is freezing cold. If inhaled directly from its cannister, it can cause a rupture in lung tissue. A canister may also release grease and metal fragments that may be inhaled.

- Avoid direct inhalation from a canister (bulb, cylinder or tank).

Burns and explosions

Nitrous oxide is not flammable, but it can increase the intensity of a fire.

- Avoid releasing nitrous oxide near flammable substances and naked flames (including cigarettes).
- Do not incinerate canisters e.g. throw in fire.

Injury e.g., falls, drowning

Nitrous oxide intoxication may cause impaired judgement, coordination and concentration, disorientation, muscle weakness and drowsiness, increasing the risk of injuries.

- Avoid using in high-risk environments such as near water, near traffic or at heights.
- Do not drive or operate machinery if intoxicated.

Frostbite to the mouth, nose, lips and throat

When nitrous oxide releases from its cannister, the gas is freezing cold. Inhaling directly into the mouth can cause frostbite to the mouth, nose, lips and throat (including vocal cords).

- Avoid direct inhalation into the mouth.

Overdose/unconsciousness/death

Nitrous oxide can affect the body in several ways which can result in overdose, unconsciousness and even death in rare cases (potentially due to hypoxia).

- Avoid using alone.
- Ensure someone who is not using knows what signs to look for regarding overdose e.g., blue lips, pale skin, no response, shallow breathing or no breathing, seizures, chest pain.
- Ensure this person knows how to respond with DRSABCD – Danger, Response, Send for help, Airways, Breathing, CPR, Defibrillator.

Cardiovascular disease/heart attack

Nitrous oxide causes the inactivation of vitamin B12 which is where the body is unable to use vitamin B12. This can lead to increased amino acid (homocysteine) levels in the body which can cause clots and hardening of the arteries and may lead to a heart attack. It is important to note that this is not prevented by oral vitamin B12 supplementation.

- Limit the amount of nitrous oxide used in any one session.
- Limit frequency of use.