

Abuse of gases

The sale of industrial gases to private individuals is not legally restricted. However, ideally gases should not be supplied for unspecified use, due to the frequently misunderstood dangers of the misuse of these substances, for example when some gases are inhaled.

EIGA members have recently seen an increase of reports and presentations in television programmes and other media demonstrating different effects of inert gases like Helium, Nitrous Oxide also known as “laughing gas”, Sulphur hexafluoride (SF₆) and more. In these cases the use of the gas can only be described as “substance abuse”. The media reports generally trivialise the effects of inhaling gases such as helium to achieve a very high-pitched voice. EIGA members and emergency services are aware of several accidents and fatalities as a result of the abuse of gases.

EIGA strongly disapproves of the use of gases on the human body without medical surveillance and, in particular, disapproves the inhalation of any gases, except those when prescribed and used as medicines, or when specifically produced, sold and used for breathing applications such as diving, etc. EIGA recommends its members or their National Associations to contact and inform any media or party involved in these presentations.



The intention of this position paper is to clarify EIGA's position, explaining the reasons for this, by describing the main hazards involved in the most common abuse of gases such as helium, nitrous oxide and sulphur hexafluoride.

Main effects of Helium (He) on humans:

Helium is a very light, non-flammable, non-toxic, colourless and odour-free gas. It is a completely inert gas and does not react with other substances.

Helium is abused by inhaling it, to achieve a very high-pitched voice.

Despite the low density of helium - 7 times lighter than air - the gas remains in the lungs after it is breathed in.

Inhaled helium can lead to unconsciousness, suffocation and sudden death! The inhaled helium displaces air from the lungs.

WARNING!

- Even a few breaths of helium can lead to suffocation and you will not realise you are suffocating!
- Inability to move and limited consciousness occur without warning.
- Unconsciousness following inhalation of helium can lead to uncontrollable apnoea, and thus to lack of oxygen to the brain and irreversible damage to the central nervous system with lifelong paralysis or even sudden death as a result.

These symptoms are typical of the inhalation or 'sniffing' of all gases and vapours, which prevent or impair the normal breathing air (oxygen) intake.

Main effects of Nitrous Oxide, (N₂O, laughing gas) on humans:

Nitrous oxide is an invisible, colourless gas with a slightly sweet smell. It is not flammable, but supports combustion. Contact with liquid nitrous oxide can cause frostbite, as the gas is typically supplied in liquid pressurised form in the gas cylinder and when released from the liquid phase cold gas quickly appears.

The media often trivialise the intoxicating effects of the inhalation of nitrous oxide and this in part is due to it being referred to as “laughing gas”.

The effects of nitrous oxide inhalation start with inhaled concentrations as low as 10%. The effects are to alleviate physical pain and alter perception.. At higher concentrations, feelings of euphoria will appear, with increasingly negative side effects such as slurred speech, balance defects, slow reactions (similar to alcoholic intoxication) and insensitivity to physical stimuli up to sudden unconsciousness. These effects are used, under strict medical supervision, in anaesthetics.

The great danger of improper use of nitrous oxide is the life-threatening, uncontrollable effect of the lack of oxygen. The symptoms are as described above for helium.

Main effects of Sulphur hexafluoride (SF₆) on humans:

SF₆ - Sulphur hexafluoride is a heavy, non-flammable, colourless and odourless gas. Contact with liquid SF₆ can cause frostbite, as the gas is supplied in liquid pressurised form in the gas cylinder and when released from the liquid phase cold gas quickly appears.

Sulphur hexafluoride is abused by inhaling it, to achieve a very deep voice.

Because of the high density of SF₆ - 5 times heavier than air - the gas is retained in the lower lungs after inhalation. This severely impairs the ability of the lungs to expel the gas during the normal breathing cycle.

Inhaled SF₆ can lead to unconsciousness, suffocation and sudden death. **The basic lack of oxygen**, just like helium and laughing gas, **is the real danger**.

More information and references:

- [1] EIGA Asphyxiation campaign documents 2003 – including Dangers of Asphyxiation Leaflet; Oxygen Deficiency training presentation and Newsletter 77.
- [2] EIGA IGC Doc 44 Hazard of inert gases
- [3] IGV – Safety Information leaflets:
Dangers of misuse of Helium, SF6 and Laughing Gas”

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