

New guidance to protect those using gas and air safely in hospitals

New guidance to protect Britain's midwives from excessive nitrous oxide exposure has been published by the Health and Safety Executive (HSE).

The guidance is aimed at those responsible for ensuring the safety of workers and new mothers on maternity wards.

More commonly known as 'gas and air' when mixed with oxygen, nitrous oxide is an invisible gas used widely in healthcare, including for pain relief during childbirth.

Depending on how well exhaled gas from women in labour is controlled, midwives are at greater risk of exposure to higher levels of nitrous oxide due to the extensive time they spend working in labour rooms.

Over time, high levels of exposure can cause serious health effects including neurological problems and anaemia so it is important that levels are properly controlled.

The [recently published guidance](#) on how gas and air should be used safely has been developed by HSE together with maternity specialists in the NHS and is also relevant for professionals working in other parts of the healthcare sector, outside of maternity wards.

Nitrous oxide is subject to the [Control of Substances Hazardous to Health Regulations \(COSHH\)](#). It has a long-term workplace exposure limit of 100 ppm or 183 mg.m⁻³ 8-hour time weighted average.

HSE advises that all hospitals using gas and air should carry out a COSHH risk assessment of each space in which it is used.

Helen Jones, head of HSE's health and public services sector said: "This is an essential piece of guidance.

"It should be taken on board by those responsible for managing health and safety in maternity units and for controlling the risks faced by staff who work with nitrous oxide. This should include consideration of workers who may be more vulnerable to the effects of exposure, such as those who are pregnant.

"Workers must also be fully consulted when it comes to monitoring how effective the control measures are, including how results are to be used.

"This will include how workers will be managed if results suggest their exposure should be reduced."

There are three main types of control systems used in maternity wards:

- a demand valve and mouthpiece or facemask used by the patient which captures exhaled breath, ensuring it is not released into the room.
- an associated extraction or scavenging system with an extraction unit located close to the breathing zone of the patient.
- general ventilation.

The demand valve and mouthpiece or facemask system is the most effective method of control. This is because the exhaled air is not released back into the room, as long as the mouthpiece or facemask is not removed before the patient exhales.

General ventilation is least effective because it:

- is located at a distance from the source (exhaled air)
- relies on the effectiveness of the room ventilation

It is important that exposure monitoring for any airborne contaminant includes the relevant contextual information for each sample taken. For nitrous oxide in a maternity department, this would include:

- the time midwives and student midwives, doctors and/or support staff attend to the delivery of a child or children (the actual exposure time, assessed over a representative number of days)
- an estimate of the level of demand by the expectant mother
- any controls present, for example scavenging equipment
- any other information that is likely to affect the exposure levels, such as movement of people or other activities in the room.

Further information:

1. [The Health and Safety Executive](#) (HSE) is Britain's national regulator for workplace health and safety. We are dedicated to protecting people and places, and helping everyone lead safer and healthier lives.
2. Further details on the latest [HSE news releases](#) is available.
3. Guidance on the [safe use of nitrous oxide in maternity units](#) is available.