

**SAFETY AND QUALITY  
REMINDER OF BEST PRACTICE GUIDANCE**

<b>Subject</b>	<b>Risks associated with nitrous oxide waste gases in dental surgeries</b>
HSCB reference number	SQR-SAI-2021-080 (AS / PHC)
Programme of care	Acute Services (AS) / Primary Health Care (PHC)

<b>LEARNING SOURCE</b>			
SAI/Early Alert/Adverse incident	✓	Complaint	
Audit or other review		Coroner's inquest	
Other (Please specify)			

<b>SUMMARY OF EVENT</b>
<p>Nitrous Oxide gas can present a health risk to staff. This can occur when control measures do not reduce the level of gas to or below the Workplace Exposure Limits (WELs), required to comply with the Control of Substances Hazardous to Health (COSHH) regulations.</p> <p>Monitoring of the levels of Nitrous oxide at a Community Dental Service clinic by an Occupational Hygienist recorded levels of the gas above the recommended WEL's. The level was highlighted by the Occupational Hygienist since it posed an unexpected serious risk to staff members working in the surgery. Inspection of the associated scavenging equipment identified that the system was not effective. Waste anaesthetic gas discharges are expected to be controlled by anaesthetic gas scavenging systems (AGSS) <b>and/or</b> ventilation and risks assessment and control measure should be in place to prevent the gas exceeding WEL's. The incident was therefore reported as a Serious Adverse Incident.</p> <p>A more extensive review was undertaken to include all Community dental service sites within the Trust where the gas was also in use. A number of those additional sites subsequently recorded levels of the gas which were higher than the recommended WEL's.</p> <p>The surgeries where levels were higher than WEL's involved both piped and standalone units. While some surgeries had anaesthetic gas scavenging systems (AGSS) installed this alone was not sufficient to ensure the gas levels remained below WEL's. In particular when multiple clinicians were using the gas simultaneously on the same site the AGSS was not effective at providing the recommended level of gas scavenging in all surgeries.</p>

## REQUIREMENTS UNDER CURRENT GUIDANCE

As a direct result of the incident above the Department of Health Medical Device and Estates Safety Policy Branch released an alert through the Northern Ireland Adverse Incident Centre (NIAIC).

<https://www.health-ni.gov.uk/sites/default/files/publications/health/NIA-2017-001.pdf>

The above alert was also brought to the attention of all General Dental Practitioners through the usual distribution channels.

This NIAIC alert listed the actions to be taken by all Trusts to ensure that a similar scenario did not arise and would not go undetected elsewhere. The purpose of this letter is to remind both the Trusts and general dental practitioners (GDPs);

- To ensure ongoing compliance with the NIAIC alert and with COSHH regulations.
- It is a legal requirement under the COSHH regulations that staff are not exposed to hazardous substances, such as nitrous oxide, above the Working Exposure Limit (WEL).
- Review of the incident subsequent to the NIAIC release has highlighted that risks exist both where the gas is used routinely or infrequently and applies to both piped and portable gas systems.

G409 Exposure measurement: Air sampling

<http://www.hse.gov.uk/pubns/guidance/g409.pdf>

Working with substances hazardous to health - A brief guide to COSHH

<http://www.hse.gov.uk/pubns/indg136.pdf>

EH40/2005 Workplace exposure limits - Containing the list of workplace exposure limits for use with the Control of Substances Hazardous to Health Regulations (as amended)

<http://www.hse.gov.uk/pubns/priced/eh40.pdf>

Health Services Advisory Committee – Anaesthetic Agents : Controlling exposure under COSHH [https://www.cdc.gov/niosh/docket/archive/pdfs/niosh-064/0064-010195-mcgregor\\_ref1.pdf](https://www.cdc.gov/niosh/docket/archive/pdfs/niosh-064/0064-010195-mcgregor_ref1.pdf)

NHS estates guidance for medical gas pipeline systems (HTM 02-01)

<https://www.gov.uk/government/publications/medical-gas-pipeline-systems-part-a-design-installation-validation-and-verification>

**ACTION REQUIRED**

**Action Required:**

Services where nitrous oxide is used should review their compliance with COSHH regulations to ensure the level of nitrous oxide gas remains within the WEL's. All areas where nitrous oxide gas is used should be subject to a Multi - Disciplinary Risk Assessment to identify the risks and control measures required and subsequently ensure that levels of the gas remain below the WEL's at all times.

**Trusts should:**

- 1 Disseminate this letter to all relevant staff, and discuss it at team meetings/safety briefings. Including all staff involved with the nitrous oxide inhalation services:
  - Community Dental Service and Prison Dental service
  - Estates/Facilities
  - Health & Safety
  - Governance & Risk Management

**NIMDTA should:**




1. Disseminate this letter to all relevant doctors and dentists in training in relevant specialties.

**HSCB should:**

1. Disseminate this letter to General Dental Practitioners (GDPs).

**RQIA should**

1. Disseminate this letter to private General Dental Practices.

<b>Date issued</b>	3 February 2021		
<b>Signed:</b>			
<b>Issued by</b>	Dr Stephen Bergin Acting Director of Public Health	Mr Rodney Morton Director of Nursing, Midwifery and Allied Health Professionals	Mr Donncha O'Carolan Interim Head of Dental Services

**RE: SQR-SAI-2021-080 (AS / PHC) - Risks associated with nitrous oxide waste gases in dental surgeries – Distribution List**

	To – for Action	Copy		To – for Action	Copy
<b>HSC Trusts</b>			<b>PHA</b>		
CEXs	✓		CEX		✓
First point of contact	✓		Director of Public Health		✓
			Director of Nursing, Midwifery and AHPs		✓
<b>NIAS</b>			Director of HSCQI		✓
CEX		✓	AD Service Development, Safety and Quality		✓
First point of contact		✓	PHA Duty Room		
			AD Health Protection		
<b>RQIA</b>			AD Screening and Professional Standards		
CEX	✓		AD Health Improvement		
Director of Quality Improvement		✓	ADs Nursing		✓
Director of Quality Assurance		✓	AD Allied Health Professionals		
			Clinical Director of HSCQI		✓
<b>NIMDTA</b>					
CEX / PG Dean	✓		<b>HSCB</b>		
<b>QUB</b>			CEX		✓
Dean of Medical School		✓	Director of Integrated Care	✓	
Head of Nursing School		✓	Director of Social Services		
Head of Social Work School			Director of Commissioning		
Head of Pharmacy School			Alerts Office		✓
Head of Dentistry School		✓	Interim Director of PMSI		✓
<b>UU</b>					
Head of Nursing School			<b>Primary Care (through Integrated Care)</b>		
Head of Social Work School			GPs		
Head of Pharmacy School			Community Pharmacists		
Head of School of Health Sciences (AHP Lead)			Dentists	✓	
<b>Open University</b>			Dispensing GPs		
Head of Nursing Branch			<b>BSO</b>		
			Chief Executive		
<b>Clinical Education Centre</b>		✓			
<b>NIPEC</b>			<b>DoH</b>		
<b>NICPLD</b>			CMO office		✓
<b>NI Medicines Governance Team Leader for Secondary Care</b>			CNO office		✓
<b>NI Social Care Council</b>			CPO office		
<b>Safeguarding Board NI</b>			CSSO office		
<b>NICE Implementation Facilitator</b>		✓	CDO office		✓
<b>Coroners Service for Northern Ireland</b>		✓	Safety, Quality and Standards Office		✓

