

# Instructions for use of Anaesthetic Gases at Karolinska Institutet

Reference 1-1045/2024

Valid from 11 April 2025

**NOTE:** *This is a translation of the Swedish version (Anvisningar för användning av anestesigas vid Karolinska Institutet). In the event of any discrepancy between the versions, the Swedish version constitutes the official decision, and the Swedish wording will prevail.*



**Karolinska  
Institutet**

# Instructions for use of Anaesthetic Gases at Karolinska Institutet

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Reference number	Ref. no previous	Decision date:	Period of validity:
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The new structure of the Swedish Work Environment Authority's regulations.			
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## Introduction

The following instructions revise and replace previous document  
Anvisningar för användning av anestesigas (dnr 1-1111/2021).

The basis for these instructions is the Work Environment Act (1977: 1160) in its entirety and applicable regulations. Emphasis is placed on the Swedish Work Environment Authority's regulations and general advice *Systematisk arbetsmiljöarbete – grundläggande skyldigheter för dig med arbetsgivaransvar AFS 2023:1*, *Risker i arbetsmiljön AFS 2023:10*, *Arbetsutrustning och personlig skyddsutrustning – säker användning AFS 2023:11* as well as *Utformning av arbetsplatsen AFS 2023:12*. The instruction also refers to the regulation *Gränsvärden för luftvägsexponering i arbetsmiljön AFS 2023:14*.

## Purpose

The instructions are intended for KI's activities where anaesthetic gases are used. The purpose is to prevent and minimize the risks associated with the use of anaesthetic gases, as well as to ensure a safe working environment for both staff and patients.

Specific handling and protection instructions with more detailed information shall be available at each workplace.

## Terms and definitions

### **Anaesthetic gases**

For the instruction, anaesthetic gas is defined as a medical product administered in gaseous form through the respiratory tract for the purpose of achieving anaesthesia or pain relief.

### **Excess extractor**

An exhaust removing anaesthetic gases from the excess valve or exhalation valve of the anaesthetic gas equipment.

**Spot extractor**

An exhaust removing anaesthetic gas at or near their source.

## **During work with anaesthetic gas**

**it's required, that**

- the responsible manager shall ensure that everyone who works with anaesthetic gas or is at risk of being exposed to anaesthetic gas has sufficient knowledge of the risks of the work and how these risks are to be prevented,
- the responsible manager shall ensure that a documented risk assessment has been carried out before working with anaesthetic gases and most importantly assesses whether the content of anaesthetic gas is acceptable in relation to the occupational exposure limit,
- the responsible manager shall ensure that written handling and protection instructions are available at the workplace and are followed,
- air pollution of anaesthetic gas must be prevented, and residues of anaesthetics must be disposed of safely,
- the responsible manager shall ensure that exposure measurement is carried out in accordance with AFS 2023:14 if it is not possible in any other way to assess how the exposure to anaesthetic gas in air relates to the occupational exposure limit value. If measurements or other data show that any limit value is exceeded, measures need to be taken to reduce the exposure in accordance with the order of priority in section 7 13§ in AFS 2023:10.

### **During work with anaesthetic gas equipment shall**

- excess extraction with sufficient capacity and continuous flow control be available,
- the equipment be controlled before being taken into operation and then undergo a technical inspection at least every twelve months and the results of the inspection be documented,
- a tightness check be performed before each use and adjusted if necessary and results of tightness check and any measures be documented,
- the person performing inspection, adjustment and control of the equipment have sufficient knowledge and access to the necessary equipment.

**During work with central distribution of nitrous oxide shall**

- the pressure be relieved before work is carried out in such a way that exposure to the gas is prevented,
- gas outlets for nitrous oxide be checked for leaks regularly and in connection with replacement of tubing, but at least every twelve months, and the results of the check must be documented.

**During work with liquid anaesthetic agents shall**

- the work be carried out so that the occurrence and spread of air contaminants is prevented (applies to anaesthetic agents which in gaseous form are intended for inhalation),
- emptying / filling of vaporisers that cannot take place in a closed system be done under a fume cupboard or in conjunction with a spot extractor,
- opened bottles with anaesthetic agents that are not a part of a closed system be stored in a specific delimited ventilated space / cabinet,
- residues of liquid anaesthetic agents be handled in accordance with KI's rules for laboratory waste.

**During work with an anaesthetic mask or other work that involves exposure to anaesthetic gas shall**

- a spot extractor be installed where there is a risk that the occupational exposure limit value for the current anaesthetic gas is exceeded due to leakage,
- the extraction part of the spot extractor be placed a maximum of 15 cm from the source of exposure,
- the capacity of the spot extractor be controlled during installation and following changes to the installation and the results of the control be documented,
- any malfunction of the spot extractor during operation be monitored by a control system.

**Appendix 1** Checklist for work with anaesthetic gases developed in collaboration with Avonova.

**Document name:**

Risk assessment of chemical hazards - Anaesthetic gases,  
version March 2025

Company Karolinska Institutet	Date	Version 1.1
Participants	Developed by Henrik Strohmayr (Avonova)	Approved by
Description	<p>The list is based on the following regulations</p> <p><b>AFS 2023:1</b> Systematic work environment management – basic obligations for those with employer responsibility</p> <p><b>AFS 2023:10</b> Risks in the Work Environment</p> <p><b>AFS 2023:11</b> Work equipment and personal protective equipment – safe use</p> <p><b>AFS 2023:12</b> Design of workplaces</p>	

[illegible]

[illegible]

12. Is there a routine to check before each use the tightness of the respiratory device? Have the results of the checks and the measures taken been documented?									
13. Is it ensured that those who carry out technical reviews and checks of the equipment prior to use have sufficient knowledge?									
14. Is there excess extraction with sufficient capacity?									
15. Can the gas flow of the excess extractor be continuously controlled?									
16. Is there a control system for excess extraction that shows malfunction during operation?									
17. Do you work with a central nitrous oxide distribution system? Before use, the pressure must be relieved without increasing exposure to the gas.									
18. Are gas outlets for nitrous oxide checked for leakage at least every 12 months? Has this been documented?									

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