

Use of Gases for Research and Teaching: Policy, Procedure and Guidance

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APPLIES TO Apply group names to define applicable areas of staff.					
GROUP 1	Principal Investigators – all institutes	GROUP 2	Laboratories workers – all institutes	GROUP 3	Site Services Staff
GROUP 4	Purchasers	GROUP 5	Research Operations	GROUP 6	Education Operations

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STATEMENT

This document relates to the rental and storage of gas cylinders within the laboratory setting. Industrial gases and special gases (customized mixtures of gases) are kept in many laboratories at St George's, University of London (from now on referred to as St George's). They are an essential part of research activity, and it is important that the correct procedure for purchase, rental and storage is adhered to. An up-to-date centralized record must be kept ensuring that all cylinders are accounted for, their location known and the requisitioner identifiable. The [Pressure Systems Safety Regulations](#) state that gas cylinders must be tested periodically. This testing is carried out by the gas supplier (owner of the cylinders) and therefore they must not remain on site indefinitely. The contents of gas cylinders are under extremely high pressure and in some cases are flammable. Consideration must be given to the safe storage of cylinders in the laboratory.

Accumulation of partially used and abandoned cylinders on site is a safety hazard as well as a financial liability. Furthermore, separate accounts used to purchase gases and to rent cylinders leads to inaccuracies with audit and invoicing, which result in delays and cancellations of orders from external suppliers. This has negative impacts on the delivery of research.

DEFINITIONS

**St George's
The Institutes**

St George's, University of London
Infection and Immunity Research Institute (IIRI)
Molecular and Clinical Science Research Institute (MCSRI)
Institute for Biomedical and Medical Education (IMBE)

Requisitioner	Population Health Research Institute (PHRI) PI or laboratory staff that requested the purchase and use of the gas cylinder
Industrial gas	Standard gases (e.g., CO ₂ , O ₂ free Nitrogen, Air, O ₂ , Helium (grade A) and 95% O ₂ /5% CO ₂) available from Internal Stores
Special gas	Customised mixtures of gases ordered specifically by researcher directly from the supplier

CONTENTS

1.1 SCOPE OF DOCUMENT

This document is a combined policy, procedure and guidance that applies to everyone involved in laboratory- based research and teaching at St George's, including research groups in IIRI, MCSRI, IMBE and PHRI. It is also applicable to Research Operations staff.

1.2 PURCHASE, RETURN AND STORAGE GUIDANCE

The purchase of gases for use in laboratories at St George's must be in line with current [Procurement Policy and Guide](#) of the University. St George's uses an online purchasing system – Agresso – through which consumables and equipment can be purchased for research purposes.

Gas cylinder purchase and associated rental must be placed according the procedure described in section 1.3 below. This process will enable continuity of procurement and returns procedure and facilitate correct auditing of our cylinder holdings; all to the benefit of our research community and the University.

Industrial Gases – St George's has a supply of cylinders containing commonly used standard industrial gases, purchased in bulk, that are available for researchers to requisition. Purchasing these gases through St George's remains the cheapest option, and they are immediately available. St George's bulk supply forms what is referred to as 'Internal Stores Industrial Gases' and stock is held and managed by Site Services. For safety reasons, the supply of industrial gas cylinders is held in the cylinder store in J Block. On receipt of an order for an industrial gas, Site Services staff will deliver direct to the laboratory of the researcher or requisitioner. They will also remove empty and unwanted cylinders from laboratories upon receipt of an internal requisition.

Special gases – are shipped directly from external supplier and delivered to the cylinder store in Site Services, who will notify the requisitioner/researcher of delivery. Site Services staff will collect empty cylinders or deliver new to the laboratory of the researcher or requisitioner, upon request via the [Estates and Facilities Helpdesk](#).

1.3 PROCEDURE

Industrial Gases

Purchase

1. The requestor must complete a requisition form, which is obtainable upon request from Research Operations [purchasing team](#), detailing the required gas, the location of room for use and subproject code for payment, stating also if collection of an empty cylinder

is required. Send the form to the Research Operations [purchasing team](#), for entry onto internal orders on Agresso

2. Requisition is raised within the internal Agresso system. Site Services receive the requisition and deliver the cylinder directly to the laboratory of the researcher, who is then responsible for connecting the new cylinder to the regulator and ensures that the cylinder is sufficiently restrained according to local rules and university guidance. Research Operations [staff](#) will be able to assist if required.

Return

1. Site Services collect empty gas cylinders as indicated on the requisition form. If there is no purchase in line with the collection, researchers must still arrange collection by filling in the requisition form and sending to the [purchasing team](#). Cylinders must be disconnected from the regulator by the researcher. Research Operations [staff](#) will be able to assist if required.

Please note: there is no charge for the return of cylinders.

Special Gases

Purchase

Special gases are specific, non-standard mixtures of gases.

They are only available by ordering directly from the supplier.

1. The requestor must complete a requisition form (available from Research Operations [purchasing team](#)) detailing the required gas, the location of room for use and subproject code for payment, stating also if collection of an empty cylinder is required.
2. **Transaction will not be progressed until confirmation of the above details have been given. Empty cylinders are not collected unless the delivery driver is instructed to do so by the supplier – researchers will continue to pay rental charges until the empty cylinder is returned to supplier.**
3. The completed requisition form is forwarded to the [Site Services email](#) by the requestor.
4. Once the order is received by Site Services staff, it will be printed for audit purposes and an external requisition will be raised within 24 hours of receipt.
5. The order will be raised by Site Services staff with BOC. (The Site Services staff will liaise with BOC to supply the correct account code for delivery).
6. Site Services staff will contact the requestor with the suggested delivery date, and request that a job is raised with the [Estates Helpdesk](#) if an empty cylinder needs to be returned.
7. The requisition form will be attached to the purchase order and internal order form by Site Services staff.
8. Site Services staff will collect the empty cylinder before the delivery is due, affixing a label showing who the cylinder owner is, the institute and location of the cylinder, and the transaction number of the order.
9. When the delivery is received, a delivery note will be obtained by Site Services staff.
10. Once the cylinder has been delivered to Site Services, an email will be sent to the requestor asking them to place a request with the [Estates Helpdesk](#) for delivery to the point of use*.
11. The requestor must sign the request form to confirm receipt.
12. Site Services staff will receipt the delivery on Agresso, attaching the note to the purchasing order.
13. The bar code number will be added to the special gas spreadsheet for audit.
14. The purchase order and additional forms will be filed for audit.

*The researcher is responsible for connecting the new cylinder to the regulator and ensuring that the cylinder is sufficiently restrained according to Health and Safety Guidance and local rules. Research Operations [staff](#) will be able to assist if required.

Return

1. Return of special gas cylinders should be requested at the same time as a replacement purchase, so that the cylinder swap occurs during the same transaction. Empty cylinders can also be returned unaccompanied – all cylinders must be returned to supplier using a returns code. Researchers should inform Site Services of the need to return an empty cylinder, and place a request with the Estates helpdesk for the collection from the lab. Site Services will contact the supplier, affixing a label with the appropriate information to the cylinder and manage the collection, retaining a collection note for audit. The audit records for rental should then be amended after collection. The code is standard and applies to all cylinders.

Please note: there is no charge for the return of cylinders.

2. The researcher must disconnect the regulator from the cylinder before Site Services collect the cylinder. Research Operations [staff](#) will be able to assist if required.

1.4 RECORD KEEPING

Centralised records must be kept and updated regularly. This will be performed by Site Services staff. This system will be independent from the purchasing system that site services management use to maintain industrial gas cylinder stock supply on site.

1.5 STORAGE OF CYLINDERS

Gas cylinder contents are under extremely high pressure and have significant stored energy which can present a hazard when released. It is a Health and Safety requirement that cylinders are stored safely at all times. Cylinders are also very heavy and relatively unstable and must be restrained in brackets that are firmly attached to the wall or bench. Alternatively, they can be placed on a suitable stand to prevent accident or injury. **Under no circumstance are gas cylinders to be left standing unsupported nor laid down flat where they may roll or cause a trip hazard.**

Cylinders must be sited away from doors and other emergency escape routes in the laboratory. They must never be sited near nor exposed to sources of heat as they can explode, and shrapnel generated from this can cause considerable injury.

Regulators must be replaced every five years to comply with regulations recommended by the British Compressed Gas Association. Replacement regulators are to be purchased by researchers, who should ensure that they are costed in grant applications. A label providing details of when to replace the regulator should be found attached to the regulator. The review of regulators forms part of the bi-annual laboratory inspection, when to replace will be considered during the inspection. In addition, hoses should be regularly inspected for wear and tear.

Never attempt to turn off a cylinder regulator that is discharging unexpectedly. The high pressure of the contents could cause serious injuries.

Never attempt to catch a falling cylinder; you could sustain a serious injury. The most common injuries associated with attempting to catch or stop a falling cylinder are contusions and fractures in the lower extremities, sprains, strains and back injuries.

1.6 LEAVERS

Special attention must be paid by researchers who are leaving St George's, to ensure that cylinders are not forgotten or left in laboratories. A cylinder audit must be performed by the departing member of academic staff and the result sent to Site Services. The cylinders will be returned to the supplier (internal or external).

1.7 HEALTH AND SAFETY SUPPORT

[SHE Office](#)

[Storage of Chemicals in the Laboratory](#)

[Manual Handling](#)

1.8 SUPPORT AVAILABLE – ADMINISTRATIVE

Requisition form is available from Research Operations [purchasing team](#).

The completed requisition form to be emailed to [Site Services](#).

1.9 SUPPORT AVAILABLE - TECHNICAL

Requests for guidance and support concerning restraints, cylinder stands, regulators and tubing can be made via Research Operations [staff](#).

1.10 FREQUENTLY ASKED QUESTIONS

1. Why must a gas cylinder be restrained?

Gas cylinders are heavy and unstable, they can cause significant damage and serious injury in the event that they topple over or detonate due to a pressure upset.

2. I only have limited space for my gas cylinder and it must be near a doorway, what should I do?

Contact the [SHE office](#) and Estates and Facilities [Helpdesk](#) to assess space and benching and to organise and support you with a restructure or reconfiguration.

3. Once I receive a gas cylinder, do I own it and how do I dispose of it?

You do not own the gas cylinder. It belongs to the supplier and they have a legal responsibility to make sure it is safe. You have purchased the gas within and the supplier is renting the cylinder to you whilst you use the gas. The empty cylinder must be returned to the supplier.

4. How much is the rental cost of a cylinder and what does it cover?

Special gases – approximately £5.50 (some are £8.78 per cylinder per month (in 2022)).

Industrial gas – approximately £5.50 per month. Estates and Facilities pay the rental bill each month with this money being recouped from users of cylinders. The rental cost covers the supplier costs for pressure testing cylinders according to regulation.

5. Why must I pay the rental costs?

The University cannot support the payment of rental charges for individual researchers.

1.11 RELATED POLICIES, PROCEDURES AND OTHER REFERENCES

[Local rules template](#)

[Occupation of Laboratory Space](#)

[Pressure Systems Safety Regulations 2000 \(PSSR\) \(hse.gov.uk\)](#)

[Research Operations Purchasers Booklet](#)

[St George's Procurement Policy and Guide](#)

1.12 RELEVANT CONTACT DETAILS

Estates and Facilities helpdesk – estates@sgul.ac.uk (extension 1234)

Research Operations purchasing team – orders@sgul.ac.uk

SHE Office – health@sgul.ac.uk

Site Services – siteservices@sgul.ac.uk (extension 5255)

Site Services Manager – [Trevor McIlree](#)

Teaching Technical Services – [Lynn Plowright](#)