Code of practice for NMR room B12 MSRH.

Carrying samples to and from the NMR labs.

The Departmental Safety Manual requires that any containers in which chemicals or samples are transported around the Department must be protected against spillage etc. if they are dropped. NMR tubes must therefore be carried in an outer container which will retain everything if the tube(s) are broken by dropping or a similar accident. By definition, this must be a closed container – open-topped containers are completely unacceptable in all circumstances.

Safety in the NMR labs.

Asphyxiation hazard. NMR magnets contain substantial quantities of liquid helium and nitrogen, and additional supplies of liquid nitrogen are stored in the lab. There is a very small but real possibility that an accident could boil off large volumes of liquid. This would produce enough gas to significantly reduce the concentration of oxygen in the room. In such an event, an oxygen depletion alarm will operate a sounder and flashing beacon inside the room and in the corridor outside.

If the alarm sounds and light flashes you MUST NOT enter the NMR room - if you are already in the room then evacuate IMMEDIATELY and summon expert help (NMR staff) if possible If someone may be trapped in the room, call for persons with breathing apparatus – the quickest choice is the Fire and Rescue service via telephone 4444.

One possible cause of this type of accident would be a violent impact of some sort on a magnet. A magnet failure (a "quench") is noisy, lasts a few minutes, produces large clouds of condensation, and is almost impossible to ignore. Probably the hazard is greater just after the event when the obvious signs have dissipated.

Stray Magnetic field.

STRAY FIELDS ARE A SPECIFIC AND SERIOUS HAZARD TO ANY PERSON WITH A CARDIAC PACEMAKER OR MEDICAL IMPLANT SUCH AS REPLACEMENT HIPS OR ANY METAL PLATES OR PINS.
If unsure seek advice before entering the NMR lab e.g. if one is allowed in an MRI Scanner then the NMR lab is okay.

Black and yellow lines on the floor mark areas of stray magnetic field into which you should NEVER go. You should also be cautious about taking personal property too close to the stray field. Do not approach a magnet wearing a backpack or carrying bags etc. Swipe cards, mobile phones and bank cards may be adversely affected.

PPE. Lab coats are neither required nor appropriate to work in this lab. Users should already have removed their gloves when leaving their own area, but gloves are completely unacceptable in this area. Users sometimes claim their sample is unusually toxic: have these individuals considered the hazard to others who may handle their sample or clear it up after a spillage ?

Other Hazards Many users need to use steps to load and unload the sample changers of the open access spectrometers – appropriate care is required. Only load/unload samples when indicated by the system – ignoring this has already caused damage and disruption. There is an emergency stop on the control panel – if this is used contact NMR staff!

Operation of the open access spectrometers.
Please use good quality NMR tubes such as Norell 507-HP which are available from MSRH stores. Fill to ~4cm depth of solution (~0.7ml).

Only users who have been appropriately trained by the NMR staff are authorised to use the open access spectrometers. Once trained, each user will be required to sign a form stating that they understand, and will abide by, the code of practice.

Any user of these systems will regularly have to remove samples from the sample changers to make space for new ones. Users must always check the computer systems to see which tubes may be removed, and MUST put these in appropriate locations in the racks provided. Under NO circumstances should samples removed from the systems be put anywhere else.

Collection of samples from the NMR laboratory.

ALL samples must be collected from the NMR area as soon as practicable – leaving them for several days is not acceptable. All samples run on the open access spectrometers may ONLY be stored in the racks supplied – a number of users are guilty of leaving samples on the spinners table and in other odd corners. We have recently had to resort to clearing these racks weekly to keep the number of uncollected samples under control. Uncollected tubes are eventually recycled by the research technicians.

The bench near the entrance is ONLY intended for samples submitted to and returned by the NMR service – it is NOT a general store for user's samples or other items.

Items left in inappropriate locations will be discarded.

Maintenance hazards

There are regular refills of the liquid nitrogen and liquid helium sections of the magnet cryostats. Keep well away from these operations and be aware that very cold gas will be released during these processes – observe any instructions from the persons carrying out these operations.

e-learning

It is your responsibility to make sure that you have completed the below course on cryogenic liquids and decanting liquid nitrogen. Completing this course is a pre-requite to NMR suite access.

https://www.imperial.ac.uk/staff-development/courses-and-programmes/safety-training/safety-courses/cryogenic-liquids-e-learning/

Seeking advice

In case of doubt or problems please seek advice from the NMR staff (Peter Haycock and Stuart Elliott), who are based in rooms B12, B13 and B14 of MSRH.

Updated June 2025

Review date : June 2026