



Energy saving in labs: walkround checklist

The checklist is designed to make you think about the energy efficiency of your lab activities, by pointing out ways to undertake your work in more environmentally friendly ways. Many of the questions relate to simple good housekeeping measures that can be implemented easily, however some questions may not be applicable to all labs.

If you have any questions, please contact sustainability@nottingham.ac.uk

Please report any maintenance problems to the Estate Office Helpdesk via the online form, at <https://estateshelpdesk.nottingham.ac.uk/Account/LogOn?ReturnUrl=%2f>.

Walk round details

Date/time				
Area covered				
School / Dept				
Conducted by				
Weather	dry/wet	cold/mild/warm	windy/still	sunny/overcast

Quick wins

- Are generic electrical items turned off when not required / when the lab is empty, such as radios and lights, as well as computer equipment and analytical equipment?
- Are ancillary services switched off whenever not in use, to reduce energy use and maintenance requirement? E.g.:
 - Air compressors
 - Vacuum pumps
 - Demin water pumps
 - Local extract fans
 - Task lighting
 - PC terminals & monitors.
- Are sterilisers/dishwashers only used when on full loads, to optimise use?
- Has responsibility for switching off been assigned (staff, or students in teaching laboratories)?
- Have you include any linked office accommodation in your switch off efforts?

Checking energy consumption

- Do you know how much energy you are consuming?

- Refer to the manufacturer's data (handbook / nameplate on equipment) to assume 50% of max load = working load, and assume 25% of max load = idle load.
- Direct measurement, at building level using metered electricity data, or for specific appliances using plug in monitors – both available from the Sustainability Team.

Heating

- When the building is occupied:
 - Are windows and doors left open when the heating/air conditioning is on?
 - Are areas suffering from overheating?
 - Are there obstructions in front of radiators or heaters?
 - Are portable electric heaters in use? Avoid the use of portable heaters as they affect the efficiency of the Building Management System, and are heavy energy consumers.
- Outside normal occupancy, are doors and windows closed?

Ventilation

- What are your ventilation options?
 - Natural – Are the windows open? Please avoid opening windows if the heating is on.
 - Mechanical – programmed into the building
 - Air Handling Units – programmed into the building
 - Outside normal occupancy, are all fans switched off and all windows closed?

Air conditioning / cooling units

- Are there any areas suffering from excessive cooling?
- Are windows and doors left open when the heating / air conditioning is on? Is this necessary?
- Do the time control settings reflect laboratory use? Match occupancy patterns and seasons (e.g. could 'free-cooling' from outside be used?)
- Are there conflicting heaters and air conditioning units? Ensure minimum 3°C dead band between heating and cooling set points.
- Is the cooling temperature be set to no more than 3°C less than the ambient temperature?

Lighting

- When the building is occupied:
 - Are lights off in unoccupied areas?
 - Are lights off where there is sufficient daylight?
 - Are lights on while blinds are closed during the day?
 - Are the light fittings / bulbs clean (and therefore providing more light)?
 - Are blinds being used to minimise solar gain in air conditioned areas?

- Outside normal occupancy, are all the lights switched off?
- Are the light switches labelled reminding people to the lights off as they leave? Or are there any automatic controls?

Laboratory equipment

- Outside normal occupancy hours, are laboratory equipment, and ancillary services turned off?
Please remember to turn off:
 - Fume cupboards
 - Centrifuges
 - Kilns/ovens
 - Microscopes
 - Incubators
 - Sterilisers/dishwashers.
- Is lab equipment being used efficiently?
 - If you have multiple incubators, can your work be organised so that one can be turned off?
 - Are sterilisers/dishwashers being used on full loads to improve efficiency?
 - Are kilns / drying ovens being used fully loaded (run multiple batches together)? Could they be used at night / weekends (to reduce the University's maximum demand and use of comfort cooling / fans while the lab is occupied)?

Refrigerated storage

- Are they placed away from heat sources to ensure maximum efficiency?
- Are they placed away from temperature sensors (so expelled heat does not affect the Building Management System which controls the heating)?
- Are they set to the correct temperature?
- Is the seal round the door effective?
- Is the appliance only open when necessary?
- Are they defrosted regularly to avoid clogging up with ice?
- Do all the contents need to be kept? Could the contents be disposed of to make way for new contents rather than purchasing additional refrigerated storage?

Computer equipment

- Are screens being turned off when leaving the computer for more than 5 minutes?
- Is the computer and all its peripherals being turned off when not in use (for more than 1 hour) and at the end of the day?
- Did you know...Your computer will only receive Windows and Security updates during its shut down process; without this, the machine will become slower over time.

Fume cupboard management

- Are fume cupboards being used efficiently?

- Is the cupboard used for general lab work? Avoid using the fume cupboard as bench space (use it only for stages of the experiment that present a hazard).
 - Is the cupboard used as storage? If possible, avoid using fume cupboards to store chemicals - use dedicated storage cupboards instead. If the chemicals need to be stored here, try to store as many chemicals together (within safety constraints) to reduce the number of fume cupboards that need to be left on continuously.
 - Is there ventilated chemical storage space below the fume cupboard? There is a rolling programme currently underway to provide specific storage cupboards below fume cupboard, that are run as more efficient versions of fume cupboards using a single smaller fan for ventilation.
 - Are adequate preparations to equipment being made before the experiment has started, so that the fume cupboard does not need to be switched on for as long?
- Are fume cupboards being left on unnecessarily?
- Are fume cupboards switched off overnight wherever possible?
 - Has responsibility been given to an appropriate person to ensure fume cupboards (and other equipment) has been turned off at the end of the day?
 - Time switches could be used to switch off cupboards when the length of the experiment is known and when the laboratory is closed (with appropriate signage).
 - When users move away from the fume cupboard, are they ensuring the sash is pulled down?