Irish Blood Transfusion Service

Green Lab Guide

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Seirbhís Fuilaistriúcháin na hÉireann

Sustainability is becoming a key practice in all aspects of our lives and it's vital to translate this into our workplaces. Due to the nature of the highly regulated work in laboratories it may seem impossible at first to tackle the overwhelming task of making the lab more sustainable. However, implementing small changes can have a big impact overall making the lab 'Greener' in the process.

We, at the National Donor Screening Labs (NDSL) which encompasses three laboratories; Automated Donor Grouping, Nucleic Acid Testing and Virology, have created this Practical Guide to Sustainability in a Medical Science Laboratory through our experience of taking part in the My Green Lab (MGL) programme. We highlight all the recommendations and changes that can be implemented easily and quickly as suggested by MGL and through our experience.

We cover Energy, Water, Recycling and Waste, Green Chemistry and Community. The key practices that helped us in our journey included: getting informed of our current practices,delegating tasks, including sustainability in our regular meetings, discussing ideas with staff and asking for suggestions.

In 2021 the NDSL became the first Medical Science Laboratory in Ireland to be awarded 'Green Level Certification' by MGL, the gold standard for laboratory sustainability worldwide (mygreenlab.org).

Energy

- Turn off the lights in the lab/offices/support rooms when they are not in use and at the end of the day, use stickers as reminders – consider if natural light is sufficient at certain times of the day
- Keep windows closed when air conditioner units are in use
- Ensure thermostats are not blocked by lab coats or equipment to ensure optimal air system function
- If possible shut off cold/warm rooms and clean rooms when not in use
- Put PCs in sleep mode or switch them off
- Printers: share if possible; default black and white and double sided printing; reduce what is printed; use chlorine free recycled paper; recycle ink and toner cartridges
- Discuss with your facilities department if the lights can be replaced with LED lights
- Discuss with your facilities department if your lab has a ventilation system, can the air changes or temperature be reduced when the lab is not occupied

Equipment

- Turn off and unplug equipment that's not in use
- Use a traffic light system for equipment: Green - switch off after use; Yellow – switch off at the end of the day; Red – do not switch off
- Investigate equipment that is rarely used around the lab: is it still required, can it be shared and if it not can it be decommissioned, donated or recycled
- Use plug-in timers for water baths / incubators to keep them running at the correct temperature at essential times only
- Use a cover for water baths to maintain temperature
- Use an energy meter to identify the largest energy consumers and replace if possible with more energy efficient equipment
- Include energy efficiency in selection criteria when buying new equipment
- Fume hoods/Biosafety cabinets
    - If decontaminating with UV light use for 30 minutes only
    - Shut the sash when not in use and never work with the sash fully open
    - Keep the light off when not in use
    - Do not use hoods/cabinets as storage areas and only have the required supplies inside
    - Do not use the unit to evaporate chemicals

Fridges and Freezers

- Take part in the MGL International Freezer Challenge (freezerchallenge.org)
- Maintain freezers by checking door seals, vacuuming condenser coils, regularly servicing and defrosting annually
- Keep a fridge and freezer inventory, label samples with expiry dates and clear out cold storage units annually
- Share cold storage units with other labs; consolidate inventory into smaller storage
- Use Styrofoam sheets or freezer packs to help a regularly accessed freezer maintain temperature when the shelves are not full
- Evaluate if any samples can be stored at room temperature/discarded after use
- Allow for air flow behind fridges and freezers to ensure efficient heat exchange
- Increase the temperature of freezers from -80oC to -70oC where possible

Water

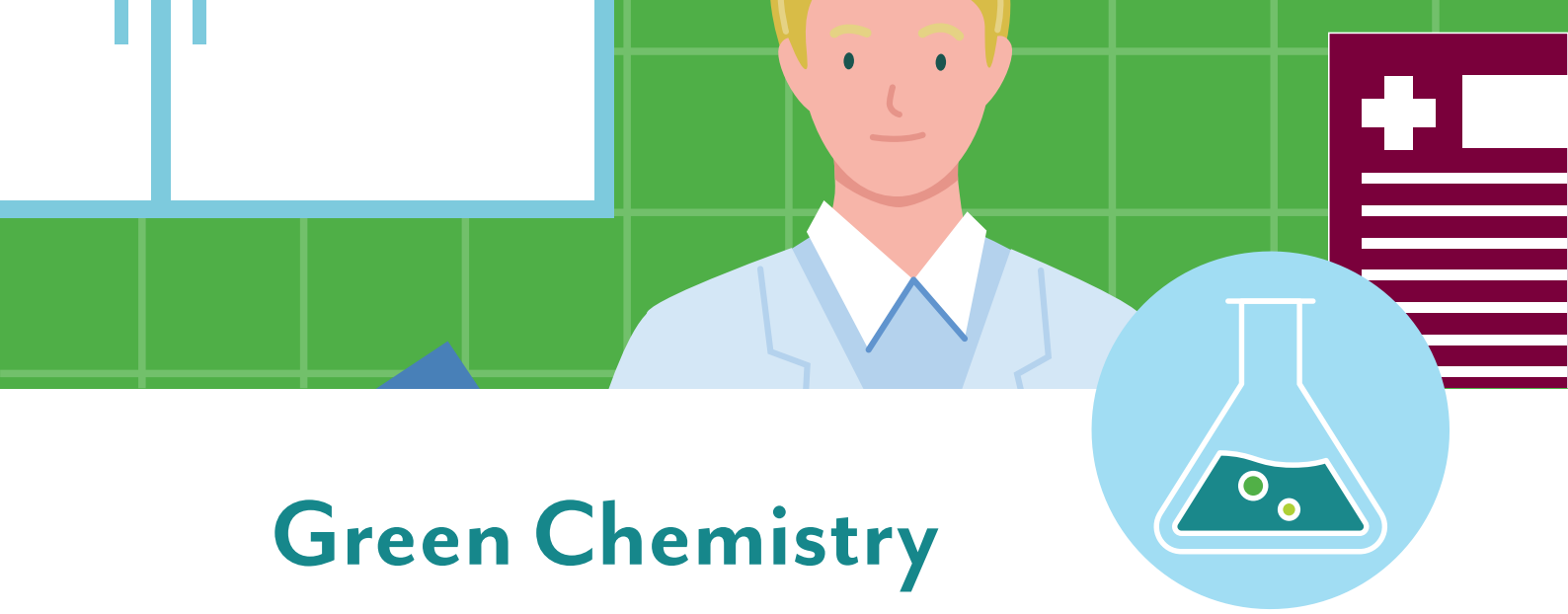
- Turn off taps when not in use and minimise how long water is run
- Investigate if low flow water aerators are installed on taps, if not see if they can be installed and ensure they are properly maintained
- Report leaks immediately
- Investigate and replace any equipment that is water cooled
- Reuse glassware to minimise glass washing and only run glassware washers when they are full
- If deionised/purified water is in use ensure all scientists know the appropriate water source for relevant tasks
- Use heated beads in non-circulating water baths instead of water

Recycling and Waste

- Follow the reduce, reuse, recycle rule and investigate new ways to implement this in your lab – contact vendors who can collect and recycle your waste
- Audit your waste streams - provide labelled bins and waste flowcharts to ensure everyone knows the correct waste stream in the lab – separate hazardous and non-hazardous waste
- Understand labelling requirements for all types of laboratory waste- contact your waste contractor/facilities if unsure
- Review your bins and recycling points - place correct bins in waste hot spots to encourage correct waste sorting
- Request/use take-back schemes from vendors for reagents and packaging – preferentially select suppliers who offer take-back schemes
- Request reduced packaging in deliveries and products from suppliers – make your suppliers aware you are looking for change
- Investigate if gloves in your lab can be recycled
- Recycle batteries/only purchase re-chargeable batteries
- Use an alternative to dry ice and reuse ice packs from suppliers - add additional insulation to large dry ice storage containers
- Donate unwanted or unused lab supplies, equipment and furniture

Recycling and Waste

- Notify other labs if you have excess equipment, supplies, reagents or chemicals to share
- Minimise the use of single use plastics, get refillable tip containers and tips without trays
- Create a lab inventory; share supplies and consolidate orders for common supplies with other labs to reduce packaging waste
- Purchase sustainable products that produce less waste
- Avoid overstocking and only purchase what your lab needs
- Use a ‘first in first out’ policy for supplies with expiry dates



Green Chemistry

- Green chemistry aims to reduce hazardous chemicals and waste to protect human health and the environment
- Discuss the 12 Principles of Green Chemistry and assess if any can be applied to your lab
- Use greener alternatives to cleaning chemicals and solvents; investigate if any reagents can be replaced with less harmful alternatives
- Minimise reagent and chemical use and only order as much as you need
- Source chemicals from renewable feedstocks, contact your vendors for greener alternatives
- Use alternatives to radioisotopes for labelling
- Exchange any mercury containing bulbs or devices to safer alternatives
- Dispose of chemicals appropriately

Community

- Create clear defined sustainability goals for your lab/team to work towards
- Include a sustainability tag line in your email signature to inform colleague and suppliers of your sustainability goals
- Make staff aware of Bike to Work scheme, carpools, walking routes and public transport options
- Use remote conferencing tools to reduce air miles
- Appoint a Sustainability Champion/Ambassador and make sustainability discussion part of general lab meetings
- Take part in the free Green Lab Ambassador programme provided by MGL and form a Green Lab Team who can help drive change in your lab
- Make sustainability visible within the lab with appropriate signage and reminders to switch off equipment/lights when not in use
- Use reusable cups, utensils and dishes in shared spaces
- Ensure everyone knows of the sustainability efforts being undertaken and put into practice around the laboratory and what they can do to help. By informing people they will become engaged
- Share your efforts with the wider community and continue to research sustainability and what you can do

my green lab certification.

Winner
SUSTAINABLE BUSINESS TEAM

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