Checklist for a More Sustainable Lab

The following list provides ideas how resources may be saved in the lab. Please check upfront (before taking action) with your local biosafety officer as well as with your local sustainability officer which action points can be used in your lab. Some processes and sample types require specific conditions which must not be changed due to safety reasons.

Energy

▶ Proposals	Not changeable	To be discussed	Change needed	Solved
> Shut the sash of biosafety cabinets and chemical hoods (put sticker with reminder on the sash)	☐	☐	☐	☐
> Avoid stand-by of instruments but turn them off	☐	☐	☐	☐
> Use clock timers for smaller instruments				
> Close the lid of your refrigerated centrifuges if they are at 4 °C	☐	☐	☐	☐
> Open your freezer as shortly as possible	☐	☐	☐	☐
> Avoid running your PCR overnight – and if you have to, put it on hold at >12 °C instead of +4 °C	☐	☐	☐	☐
> Set your freezers to -70 °C instead of -80 °C	☐	☐	☐	☐
> Turn off the lights in the evening before you leave	☐	☐	☐	☐
> Know and stick to the heating and cooling times of your devices	☐	☐	☐	☐
> Know your operations time and run your instruments only as long as you need them	☐	☐	☐	☐
> Only autoclave items which need to be sterile, other items can run through the dishwasher	☐	☐	☐	☐
> Fill autoclave and dishwasher to max. loading, avoid 25%-loading runs	☐	☐	☐	☐
> Replace ice machines by cooling blocks	☐	☐	☐	☐

Water

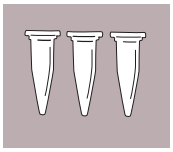
Proposals	Not changeable	To be discussed	Change needed	Solved
> Run devices like autoclaves or washing machines only fully loaded	☐	☐	☐	☐
> Check your instruments' program – apply the resource-efficient mode and check out if there's an eco-friendly mode	☐	☐	☐	☐
> Check tubes for leckages	☐	☐	☐	☐
> Avoid single-pass cooling	☐	☐	☐	☐
> When you're working in chemistry than check if you could switch to air cooling rather than water cooling	☐	☐	☐	☐
> Replace ice by other cooling devices like cooling blocks	☐	☐	☐	☐
> Metal beads can be a good alternative to water baths	☐	☐	☐	☐
> Cover up your water bath	☐	☐	☐	☐
> Check the water quality & choose lowest water grade acceptable for the specific task	☐	☐	☐	☐
> Autoclaves should always be closed except for loading and unloading – avoid additional heat load resp. steam load to your ventilation system	☐	☐	☐	☐

Your notes

Reagents & Chemicals

Proposals	Not changeable	To be discussed	Change needed	Solved
> Check for alternatives for toxic or hazardous products, e.g. β-Mercaptoethanol can be replaced by the less toxic dithiotreitol (DTT) in RNA extractions	☐	☐	☐	☐
> Do not store reagents or chemicals in the fume hood	☐	☐	☐	☐
> Order oligos or antibodies in dry condition - saves resources for cooling and packaging material	☐	☐	☐	☐
> Give surplus chemicals or reagents which you do not need any more to a lab that needs it	☐	☐	☐	☐
> Use biobased solvents	☐	☐	☐	☐
> Only order what you really need	☐	☐	☐	☐
> Use an inventory system to be up to date & to not to miss an expiry date	☐	☐	☐	☐
> Use non-toxic alternatives for ethidiumbromide like GelRed® or SYBR® Green	☐	☐	☐	☐
> Look out for recombinant proteins or enzymes like recombinant BSE	☐	☐	☐	☐
> Choose FCS-free media whenever possible	☐	☐	☐	☐

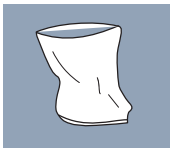
Your notes



Consumables

Proposals	Not changeable	To be discussed	Change needed	Solved
> Use the appropriate size of your tubes	☐	☐	☐	☐
> Reuse tubes and other devices whenever reasonable	☐	☐	☐	☐
> Replace plastic by other material like glass or metal, e.g. inoculation loops	☐	☐	☐	☐
> Reconsider if you really need a sterile device (pipette, tube, …) for your current experiment	☐	☐	☐	☐
> Minimize e.g., by reducing the diameter of your petri dishes	☐	☐	☐	☐
> Use appropriate, sized vessels to store your samples	☐	☐	☐	☐
> Use mastermixes	☐	☐	☐	☐
> Choose refills – cost less and use less packaging	☐	☐	☐	☐
> Look out for labels, like ACT or ENERGY STAR®	☐	☐	☐	☐
> Minimize your methods e.g., a dilution series can be also performed in 96-well plates instead of tubes	☐	☐	☐	☐

Your notes

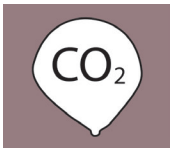


Waste

Proposals	Not changeable	To be discussed	Change needed	Solved
> Separate your non-contaminated waste like packaging (paper, plastics,..) and put it into the designated waste bin so that it could be recycled	☐	☐	☐	☐
> Follow your local recycling scheme – contact your waste management if you are unsure	☐	☐	☐	☐
> Substitute hazardous chemicals by non-hazardous variants wherever possible	☐	☐	☐	☐
> Use recycling programs	☐	☐	☐	☐
> Use bio-based solvents, e.g. bio-based ethanol	☐	☐	☐	☐
> Use take-back programs e.g. for cooling packs	☐	☐	☐	☐
> Use refill systems e.g. for pipette tips or solvent containers	☐	☐	☐	☐
> Reduce waste by minimizing your experimental design	☐	☐	☐	☐
> Change to reusable items wherever possible to avoid single-use waste	☐	☐	☐	☐
> Use charcoal to bind and reduce your ethidiumbromide waste quantity	☐	☐	☐	☐

Your notes

eppendorf



Methods & Experiments

Proposals	Not changeable	To be discussed	Change needed	Solved
> Use keywords to search for methods and experiments like sustainable, resource efficient, green chemistry, green analytical chemistry, energy efficiency	☐	☐	☐	☐
> Miniaturize your methods	☐	☐	☐	☐
> Apply the principles of green chemistry & green analytical chemistry				
> Choose green, non-toxic solvents	☐	☐	☐	☐
> DNA and RNA does not always have to be stored @ -80°C, especially for short storage	☐	☐	☐	☐
> Use alternative methods for DNA storage like room temperature storage methods	☐	☐	☐	☐
> Plan your experiments ahead: think where you can reduce the scale of your experiment and the amount of material and reagents	☐	☐	☐	☐
> Be aware: an unplanned repetition of your experiment means that you're wasting resources	☐	☐	☐	☐
> Choose the newest software version when doing a digital analysis	☐	☐	☐	☐
> Share experimental approaches and methods that did not work – this prevents others from wasting time and resources	☐	☐	☐	☐

Your notes

Organisation & Routines

Proposals	Not changeable	To be discussed	Change needed	Solved
> Share your instruments	☐	☐	☐	☐
> Merge your orders to save transport ways and emissions	☐	☐	☐	☐
> Establish an inventory management for your samples, reagents, chemicals & consumables	☐	☐	☐	☐
> Check before buying a new kit, chemical or reagent if it is already available in your lab	☐	☐	☐	☐
> Reach out to other labs if you could establish a sharing system for reagents and chemicals	☐	☐	☐	☐
> Establish a first in/first out routine for chemicals and reagents to avoid expired items	☐	☐	☐	☐
> Get organized in your freezer: rack systems need less space than bags or single boxes in different sizes	☐	☐	☐	☐
> Declutter and defrost your freezers regularly	☐	☐	☐	☐
> Establish a labs departure checklist for everyone who exits the lab	☐	☐	☐	☐
> Establish a sustainable procurement: look out for environmentally conscious suppliers and product labels like ACT, ENERGY STAR®, or EGNATON CERT	☐	☐	☐	☐

Your notes

Your local distributor: www.eppendorf.com/contact
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