

DECEMBER 2020

Personal Experience with Green Products



Many researchers at the NIH have adopted green products for their research needs. These products prioritize the environment in many ways, such as increased energy efficiency, decreased waste, decreased toxicity and many more. To facilitate the use of these products, below is a collection of products that have been successfully used by researchers at the NIH. Please note, the NIH does not endorse any of these products. These products are being shared with the permission of the researchers to improve awareness of green lab products at the NIH.

Minoo Shakoury-Elizeh (NIDDK), Daman Kumari (NIDDK), Barbara Murphy (NCI) and Barb Zwiesler (NIDCD) are a few of the leaders of sustainability in NIH labs. They each use many green products in their labs, some of which are more suited to specific research and others that are general. Here is a list of green products that are used in one or more of their labs:

- Safer alternatives to ethidium bromide – ex. GreenGlo, SYBR™ Safe DNA gel stain, pre-cast gels
- Semi-dry transfer for western blots (reduces chemical waste and better time efficiency)
- Digital imaging techniques (replaces the need for x-ray imaging or the use of silver-containing dark room chemicals)
- LED microscopes (offer energy savings over traditional bulbs and eliminate mercury)
- Small footprint spectrophotometers (often do not require use of cuvettes and directly measure the concentration of small volumes of DNA) – ex. DeNovix DS-11, Nanodrop OneC
- Creating database for lab collections (can be used to save time and energy when searching for cell lines, antibodies, freezer/refrigerator samples, etc.) – ex. Quartyz, LabArchives
- Electronic notebooks (provides digital backups, saves space and saves resources) – ex. LabArchives
- Environmentally-friendly hand soaps – ex. GOJO Multi-Green Hand Cleaner

Minoo Shakoury-Elizeh has had great success with dry blotting and digital imaging systems. Through the first year of using this strategy (2011), Minoo's lab saved over \$11,000. Minoo also uses Histo-Clear as a safer alternative for xylene. Additionally, she has purchased Dell Ultrasharp U2419HC monitors, which have Arsenic-free and Mercury-free panels. Daman Kumari switched to using the Monarch® Plasmid miniprep and DNA Cleanup kits from New England Biolabs due to their reduced plastic use and recyclable packaging. Another technique Daman has utilized is fluorescence and chemiluminescence for detecting nucleic acids in place of radioactive isotope labeling. Eliminating the use and disposal of radioactive chemicals helps create a safer work place and reduces the risk of environmental damage. Barbara Murphy of the NCI Lab of Cell Biology has successfully used two green alternative products: SimplyBlue Safe Stain for visualizing protein bands on polyacrylamide gels and TaqMan miRNA ABC Purification Kit, which uses bead capture to replace hazardous chemicals like phenol. Her lab has recently purchased tissue culture media that does not require refrigeration, which cuts down on the use of cold storage space. Lastly, her lab has replaced traditional water baths with Lab Armor bead baths, which reduces water use and cuts down on contamination. Barb Zwiesler has adopted the E-gel mini agarose gel system, which saves energy, reduces waste, and is safer because the gel stain and buffer are locked inside of the plastic cassette. Her lab also uses refill tips that eliminate unnecessary plastic and save storage space. Lastly, she uses a dual compressor ultra-low temperature freezer that, in addition to being Energy Star certified, has the added benefit of a back-up compressor should one compressor fail.

Please consider utilizing some of the products or techniques described above to make your lab more sustainable! If you are interested in learning more about any of these positive experiences, please feel free to reach out to Minoo, Daman, Barbara and Barb!

TAKE ACTION

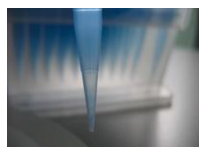


Power Down Over the Holidays

The Holidays often give us a brief respite from our lab or office (or, this year, our home office). Taking a few minutes to power down your electronics and turn back the heat can help save energy while you are away.

[LEARN MORE](#)

SPOTLIGHT



Pipette Tip Washing and Other Sustainability Efforts at NCATS

The Automation Team at NCATS has taken great efforts to reduce their waste generation in a field traditionally driven by single-use consumables. Learn about their tip washing process and more in this month's article.

[LEARN MORE](#)

NEMS TRAINING

Did you know? A tip washer allows the use of pipette tips multiple times with minimal risk of contamination, which greatly reduces plastic waste generation. To learn more about waste reduction at the NIH, please visit the [NEMS Training webpage](#) to view a short (20 minute) NIH environmental awareness training video.