

GREEN LABS GUIDE



Penn
Sustainability



OVERVIEW

Penn's *Climate and Sustainability Action Plan 3.0*, launched October 2019, serves as our roadmap for campus sustainability and builds upon the previous ten years of environmental leadership. Labs are large consumers of energy on campus and serve as an important opportunity to lessen the campus' overall environmental footprint. The Green Labs program supports the University's goal of reducing carbon emissions 100 percent by 2042.

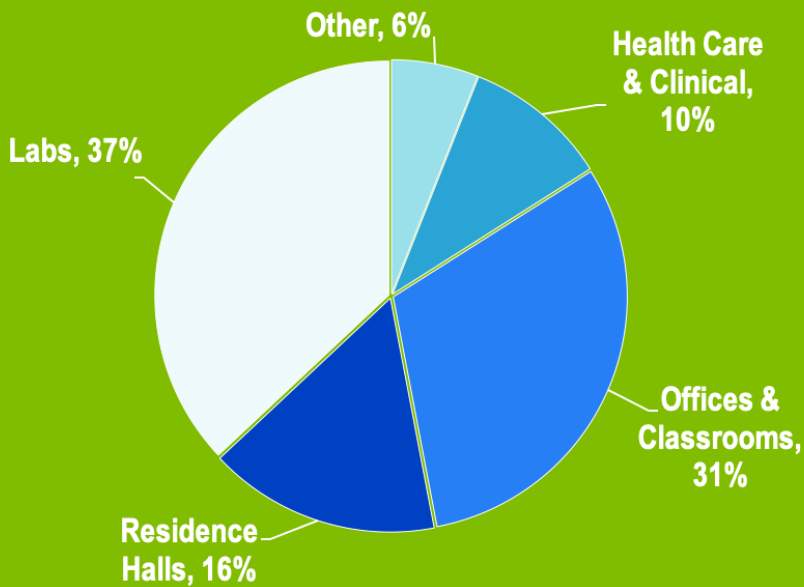
Since labs vary in size, type, and use, it is up to individual lab managers to use this resource to reduce your lab's environmental impact. This document provides a checklist, posters, and signs to serve as prompts to improve performance of your lab throughout the year.

By posting your Green Labs Decal in your building, you will help increase the visibility of the Green Labs Program, promote conversation, and increase participation. Program visibility helps improve behavior and acts as a reminder for people to continue green habits. Please help spread the word about the importance of lab sustainability and let your neighbors know about your commitment by displaying the Green Labs sticker and posters prominently.

To receive a Green Labs Decal you must get 75% of your lab personnel, including students and interns, to sign on. Your department chair should also sign the commitment form to demonstrate senior staff leadership. Once complete, email a scanned copy of the form to **sustainability@upenn.edu** with the subject line **'Green Labs.'** You will then receive a Green Labs decal and framed certificate to display in your lab.



CARBON EMISSIONS AT PENN

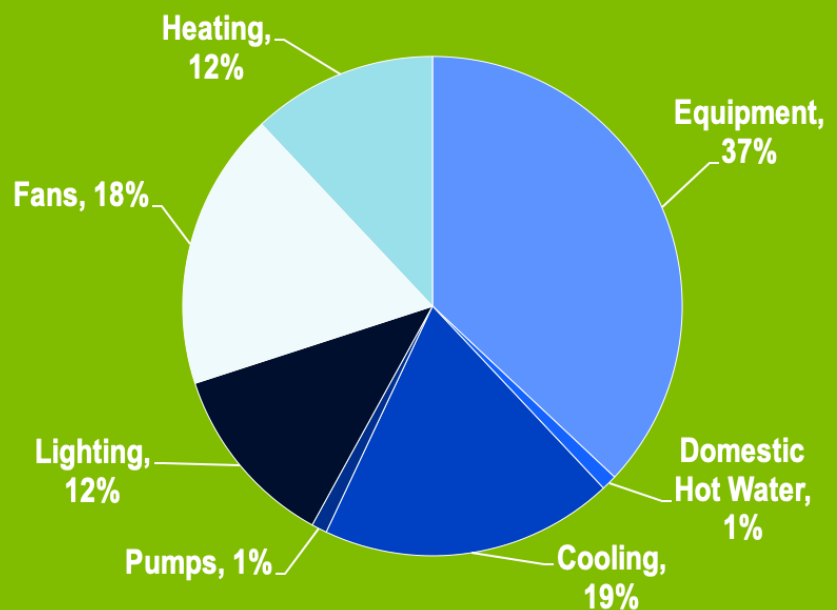


CARBON EMISSIONS AT PENN

Incorporating sustainable practices into your daily lab routine will go a long way towards saving energy, reducing emissions, and helping the University reach its Climate and Sustainability Action Plan 3.0 goals. The graph on the left shows emission sources at Penn, showcasing how labs comprise the largest percentage of emissions on campus.

CARBON EMISSIONS IN LABS AT PENN

Conserving energy is an integral part of Penn's *Climate and Sustainability Action Plan 3.0*, as decreasing or eliminating energy consumption is the most direct method of reducing the University's carbon footprint. Labs have high air exchange requirements and use a lot of energy-consuming equipment. Combined these factors make them the largest sources of carbon emissions on Penn's campus. As you can see in the graph opposite, lab equipment makes up a large part of these emissions.



Source: the data displayed in these charts come from 2014 energy data from FRES.

COMMITMENT FORM

To display your commitment to making your lab practices more sustainable, we provide a Commitment Sticker to labs that have 75% of their members and their Department Chair commit to greening their lab practices.

Date Submitted: _____

Primary Contact: _____
Name Title Email Address

Lab (And Program/Department if applicable): _____

School/Center: _____

Address: _____

Number of people in lab: _____

I confirm that to the best of my knowledge, this lab is working to make their practices more sustainable.

Signature of Department Chair / Program Chair Email Address

The below members of our lab sign to affirm that they have read and understand the Green Labs @ Penn manual and commit to taking action to improve their daily lab sustainability. The signatures represent 75% of our full and part-time lab members.

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COMMITMENT REQUIREMENTS

SUBMITTING YOUR COMMITMENT

There are two options for labs to complete the Green Labs Commitment.

- 1 Labs can print the **Commitment Form** (pg. 3) and **Green Labs Checklist** (pgs. 11-12) from this document, complete and scan the documents, and email them to **sustainability@upenn.edu**, **OR**
- 2 Labs can complete the Green Labs Checklist digitally using this **Qualtrics form**.

After Penn Sustainability reviews your scanned documents OR submitted Qualtrics form, you will receive a commitment sticker and framed certificate to proudly display in your lab. You will also be asked to renew your commitment every 3 years.

RECOMMITMENT

Your lab's commitment lasts for 3 years. After 3 years has passed, you will be asked to resubmit documentation of your commitment.

In addition to the completed Commitment Form and Green Labs Checklist, you will be asked to explain what improvements you have made over the past 3 years since your previous submission. **Please explain these lab improvements using a word document**, and attach this word document to your email submission along with your new commitment form and updated checklist.



DAILY ACTIONS

ENERGY AND WATER CONSERVATION

TURN OFF LIGHTS

Lighting comprises about 12% of lab energy use. Use daylight when possible or task lights instead of overhead lights. Install LED bulbs in desk lamps. Check with coworkers and Building Administrators when modifying any lighting, and inquire with your Building Administrator about options to automate lighting controls.

CLOSE FUME HOOD SASHES

Fume hoods are one of the largest energy consumers in the lab. The fan motor constantly pulls heated or conditioned air from the room and exhausts it to the outside via the fume hood stack, so closing the fume hood saves energy. Closing the sash also better protects you from hazardous materials in the hood.

TURN OFF BIOSAFETY CABINETS WHEN NOT IN USE

To maintain a safe lab environment, allow Biosafety cabinet fans to run for 10-15 minutes unobstructed before use. Always follow EHRS best practices for safety. EHRS does not recommend the use of UV light for disinfection, so save a little energy and leave it off. For more information, please see the [Biosafety Cabinet section of the EHRS website](#).

INCREASE AUTOCLAVE EFFICIENCY

Make sure items really need to be autoclaved. Reduce the frequency at which individual items are autoclaved and increase efficiency by creating a sign-up or schedule to coordinate use.

TURN OFF EQUIPMENT NOT IN USE

Reminder stickers on equipment can be useful for getting in the habit of shutting down equipment when not in use. Most ovens, gas chromatography machines, and centrifuges reach operating standards in as little as 20-40 minutes. Keep centrifuge rotors refrigerated so they are ready.

CLOSE WINDOWS AND DO NOT USE SPACE HEATERS

When the HVAC system is on, it is important to work with your Building Administrator and FRES to ensure comfort in your space. Space heaters are prohibited on campus unless approved by FRES Policy. Typical space heaters use ten times more energy than the average refrigerator. Keep an extra sweater on hand to adjust to fluctuating temperatures, as it may be difficult to adjust some spaces to suit the preferences of all occupants.

USE THE LOWEST GRADE WATER AND ELIMINATE WATER STILLS

Remember to use the lowest grade water appropriate, ensuring that high quality water is available when required. Consider soaking rather than continuous flushing to conserve water. Using stills to filter water to high quality standards can consume considerable water and energy. Instead of water stills, use reverse osmosis or ion exchange methods when possible to conserve energy.

REPORT LEAKING FAUCETS

Contact your Building Administrator or submit a [Facilities work ticket](#) on the FRES website to report a drip or leak whenever you see one. Do not assume someone else has already done it!

USE SHUT OFF TIMERS, WATER MISER VALVES, AND WATERLESS BEAD BATHS

It is easy to forget to turn off water, even when filling a jug or rinsing glassware, but these simple tools can help reduce water waste! Consider running a recirculating loop through a cold-water bath as an alternative to running water down the drain. Ensure water baths are turned off each evening or consider investing in a waterless bead bath. Various products on the market utilize beads or other materials to keep samples warm or cold without using any water.

DAILY ACTIONS

WASTE REDUCTION AND PURCHASING

RECYCLE

Make reducing waste easier by making sure that recycling and trash bins are clearly labeled with [standardized recycling and trash signage from the FRES website](#). If you need additional recycling bins, talk to your Building Administrator.

If your lab/building hasn't already made the switch to [centralized trash and desk-side recycling](#), discuss implementing this practice with your Building Administrator. Centralized trash and desk-side recycling utilizes one or more trash bins in a centralized location and multiple smaller recycling bins at each person's work station, making it as easy as possible to recycle.

HAZARDOUS WASTE

Safe disposal of hazardous waste is critical for a healthy environment. Make sure non-hazardous waste is not included, as disposing of hazardous waste is expensive. Never dump chemicals down the drain! Ensure proper disposal of chemicals by contacting EHRS with questions, problems, or for a pickup.

KNOW YOUR SPECIFIC WASTE DISPOSAL PROTOCOLS

Visit the [EHRS website](#) for specific information about the proper disposal of chemical waste, radioactive waste, biohazardous waste, sharps, glassware, and more.

PURCHASE REFURBISHED/USED LABORATORY EQUIPMENT

Penn has a discount pricing agreement with Global Medical Instrumentation (GMI). The GMI program strives to reduce the costs for acquiring reliable used laboratory equipment, meeting specifications, and reducing the cost of ownership through decommissioning of unneeded instruments, trade-ins against new purchases, and disposal services. Please contact Dan Erzberger at (800) 745-2710 or derzenberger@gmi-inc.com for additional information about products and pricing.

SHARE SUPPLIES

Use [Ben's Attic](#), the University of Pennsylvania's surplus property exchange website, to search for and share excess supplies.

RECYCLE LAB EQUIPMENT, CELL PHONES, BATTERIES, AND PORTABLE ELECTRONICS

It is especially important to recycle electronic equipment since the Pennsylvania Department of Environmental Protection (PADEP) has banned most electronic equipment from landfills. Check the [EHRS website for a list of approved electronic waste \(e-waste\) recycling vendors on campus](#).

EHRS will also collect batteries from University research labs. Visit the [Battery Disposal Policy page on the EHRS website](#) for more information.

You can also take electronics, batteries, light bulbs, writing utensils, and other items to your School's or Center's year-round designated collection locations or annual collection events. Find out more about these permanent collection spots on the [Penn Sustainability website](#).

SIGN YOUR LAB UP FOR MANAGED PRINT

Penn Purchasing's Managed Print services saves money and reduces printing waste. The system utilizes a convenient shared network to reduce surplus printers across your office and improved quality and reliability. To find out more and enroll, visit the [Business Services website](#).

BUY CHLORINE FREE PAPER, AND REUSE & RECYCLE IT

Make double-sided printing your default setting to reduce paper use. Purchase paper with high-recycled content, like Office Depot's 30% recycled content, 70% FSC paper (their cheapest option). Reuse single-sided paper collected from drafts as scrap paper to reduce paper use.

DAILY ACTIONS

WASTE REDUCTION AND PURCHASING

ELIMINATE THE CIRCULATION OF EXCESS JUNK MAIL

Penn Mail Services estimates that as much as 40% of Penn's incoming mail consists of bulk rate advertising mail. It is difficult for Mail Services to determine whether or not this unsolicited mail is useful information to the recipient or whether it is considered "junk mail." Therefore, the mail is delivered to Penn departments and the recipient is able to determine what they consider to be "junk mail" and discard it accordingly. This unsolicited mail is wasteful and creates an administrative problem for Penn. Simply put, the handling of this unwanted "junk mail" creates extra work and expense for students, faculty and staff and for Mail Services. Help prevent excess junk mail by removing names from vendor catalog mailing lists. Ask vendors and suppliers for mailings and catalogs in electronic form.



USE REUSABLE WATER BOTTLES, COFFEE MUGS, AND OTHER ITEMS

While eating and drinking is not permitted in labs, using a reusable water bottle in break rooms and offices cuts down on plastic waste and the environmental impact of commercially bottled water. Use the [Water Bottle Refill Station Map](#) on the Penn Sustainability website to find where the nearest one is. If you're interested in having a refill station in your office, contact your Building Administrator to discuss the cost and feasibility of getting one installed.



Other reusable items to utilize in break rooms and offices include reusable coffee mugs and cups, plates and bowls, and utensils. Provide dish soap and a cleaning brush or sponge at the sink for easy washing.

DAILY ACTIONS

RECYCLING AND VENDOR TAKE-BACK PROGRAMS

RECYCLE PRINTER INK AND TONER CARTRIDGES

Telrose Corporation will pick up used printer ink and toner cartridges from your lab and make sure that they are re-used by the manufacturer. To request a pick-up of your used cartridges, or if you need a free collection box, send an email with your name, address, and suite/office/lab to: support@telrosecorp.com.

STYROFOAM TAKE-BACK

New England Biolabs and Sigma-Aldrich Styrofoam shipping boxes can be sent back by using the pre-paid postages on the container for reuse and recycling.

RECYCLING OF CENTRIFUGES AND ROTORS

Purchasing Services offers recycling and disposal of laboratory centrifuges and rotors through its contract with Beckman Coulter. The Beckman Coulter representative will work with laboratories to recycle/return centrifuges and rotors to help free up valuable lab space. Beckman Coulter also accepts returns from other suppliers as well, and will utilize the recycling/return as trade-in value on a laboratory's next Beckman Coulter centrifuge purchase. Contact Jessica Tsaoi at 215-964-0293 for specific information and documentation.

RECYCLING OF CORNING, FALCON, & AXYGEN PRODUCT PACKAGING

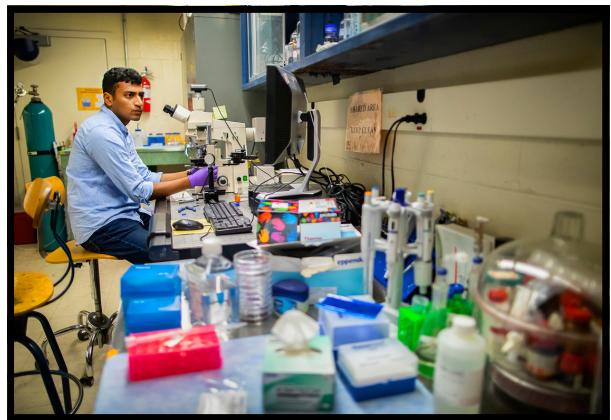
Purchasing Services offers the recycling and disposal of Corning, Falcon or Axygen product packaging through Corning's Package Recycle Program. Visit the [Corning website](#) to learn more.

RECYCLE USA SCIENTIFIC LABORATORY PIPETTE PRODUCTS

You can recycle USA Scientific TipOne racks and inserts at no charge! Visit the [USA Scientific website](#) for more information or contact Penn's sales representative Chris Muta at 800-872-3847 ext. 506 or cmuta@usascientific.com.

PARTICIPATE IN THE REUSABLE SHARPS CONTAINER PROGRAM

Reusable sharps containers lower costs while increasing safety by requiring fewer people to handle the sharps. Visit the [Business Services website](#) for more information on the Reusable Sharps Program.



INVEST IN A TERRACYCLE ZERO-WASTE BOX

Terracycle provides services to recycle waste that cannot be recycled through regular recycling collections. Purchase a box, collect items, and ship them to Terracycle. [Terracycle boxes](#) are available for items such as pipette tip boxes and protective eyewear. Be sure to follow Terracycle and EHRS guidelines regarding accepted types of waste.

MONTHLY ACTIONS

SET MINIMUM OFFICE PURCHASE ORDER AMOUNTS

Set a minimum office purchase order of \$100-\$200, and manage purchasing to reduce the number of purchase orders. This will help to reduce shipping charges, packaging, and delivery fuel consumption.

USE THE EHRS SOLVENT ALTERNATIVES FACT SHEET

This [Fact Sheet](#) offers suggestions for selection of solvents for use in chemical reactions, extractions, and purifications in chemical research labs. The Environmental, Health and Safety (EHS) group at Pfizer Global Research and Development initiated a project to assess the suitability of common solvents based on criteria of (i) Worker Safety, (ii) Process Safety, and (iii) Environmental and Regulatory Considerations.

Preferred	Usable	Undesirable
1-Butanol	2-MethylTHF	Benzene
1-Propanol	Acetic Acid	Carbon tetrachloride
2-Propanol	Acetonitrile	Chloroform
Acetone	Cyclohexane	Di-isopropyl ether
Ethanol	Dimethyl Sulfoxide	Dichloroethane
Ethyl acetate	Ethylene glycol	Dichloromethane
Isopropyl acetate	Heptane	Diethyl ether
Methanol	Isoctane	Dimethoxyethane
Methyl ethyl ketone	Methyl t-butyl ether	Dimethyl acetate
t-Butanol	Methylcyclohexane	Dimethyl formamide
Water	Tetrahydrofuran	Dioxane
	Toluene	Hexane(s)
	Xylenes	N-Methylpyrrolidinone
		Pentane
		Pyridine

KEEP AN UPDATED CHEMICAL INVENTORY

Chemical inventory is mandatory for all labs. Visit the [EHRS website](#) for more information about Penn's inventory system. Know the supplies you have so you don't over order. See if another lab has a chemical that you can share or only order what you need. Make sure chemicals are being dated when opened and used on a first-in, first out-basis to keep supplies fresh.

MAINTAIN ULT FREEZERS FOR MAXIMUM EFFICIENCY

- If you don't fill a whole freezer, share one with a neighboring lab.
- Keep freezers full, and fill empty spots with ice packs or empty boxes.
- Consolidate compact models into a more energy efficient, full-sized model.
- Store samples as warm as possible.
 - Chill up -40C and -30C freezers to -20C.
 - Chill up -80C freezers to -70C. Raising the temperature from -80 to -70 degrees Celsius saves up to 30% of the cooling energy use.
 - Dehydrated DNA and RNA samples can be stored at room temperature without degradation. For more information, see [Stanford University's 2009 pilot study](#).
- Defrost freezers when ice reaches 2 cm thick, and vacuum the condenser coils on the outside when dust collects.
- Change and rinse filters as recommended by manufacturers.



PARTICIPATE IN GREEN LABS WORKING GROUP MEETINGS

A Green Labs Working Group meets monthly to discuss sustainable solutions for Penn staff who work in labs. Contact Elicia Preston for more information: eliciap@penmedicine.upenn.edu

ANNUAL ACTIONS

INVENTORY EQUIPMENT BEFORE PURCHASING

Set a minimum office purchase order of \$100-\$200, and manage purchasing to reduce the number of purchase orders - reducing shipping charges, packaging, and delivery fuel consumption.

NOMINATE PARTIES FOR THE GREEN PURCHASING AWARD

The Green Purchasing Award is for an individual or team who significantly advances the development of sustainable purchasing practices at Penn. The goal is to spotlight those who are championing sustainability across campus, as well as to celebrate key projects that are contributing to a more sustainable future. For more information, visit the [Business Services website](#).

HOST A GREEN EVENT

Check out [Penn Sustainability's Green Events Guide](#) to find out ways to green your event – big or small. To begin, think about how you can:

- Reduce packaging and waste as much as possible.
- Utilize composting for events that generate food waste.
- Make your sustainable decisions visible to communicate their importance to guests.
- Make it convenient for attendees to properly sort their waste.
- Provide locally sourced and plant-based foods.



PARTICIPATE IN THE PENN ULTRA-LOW TEMPERATURE (ULT) FREEZER EFFICIENCY PROGRAM

This program aims to reduce the number of old, under-utilized, and abandoned freezers, while incentivizing the purchase of energy-efficient ULT freezers. The program includes incentives for both recycling existing freezers and purchasing new freezers. For specific information on the rebates, please visit the [Penn Sustainability website](#).

HOST AN ANNUAL FREEZER CLEAN OUT

1. Inform the lab of the upcoming event in advance so they can plan to participate.
2. Develop a schedule and have researchers sign up for a time to clean out their freezer space. The clean out should occur one shelf at a time to avoid excess warming.
3. All samples that will remain in the freezer must be properly labeled and entered into the lab's freezer inventory. Please refer to EHRS's site for resources to complete your freezer inventory.
4. Ensure that the lab manager will be on hand throughout the event to answer questions.
5. Remove excess ice from the freezer using a rubber mallet (metal tools can damage the freezer coolers)
6. At the end of the clean out, determine if you can consolidate to reduce the number of freezers you currently keep plugged in. If your freezer is front opening, fill empty space in the freezer with filled water bottles to help the freezer maintain temperature until more samples fill it.

PARTICIPATE IN THE INTERNATIONAL LABORATORY FREEZER CHALLENGE

This challenge is a cold storage competition aimed at optimizing freezer sustainability in order to encourage energy efficiency and reduce costs while promoting sample accessibility and integrity. Learn more on the [International Freezer Challenge website](#).

GREEN LABS CHECKLIST

GENERAL TIPS

- Participate in Green Labs meetings
- Have a Green Labs team member perform a lab audit
- Post a printed copy of the checklist in the lab or incorporate it into annual processes

ENERGY CONSERVATION

- Close fume hood sashes
- Turn off biosafety cabinets when not in use
- Turn off equipment when not in use
- Close windows if your HVAC system is on
- Remove space heaters
- Use equipment as instructed by the operating manual
- Provide regularly scheduled maintenance for all equipment

FREEZERS

- Share a freezer with a neighboring lab
- 'Chill up' freezers (raise temperatures from -80C to -70C and -40/-30C to -20C)
- Store select samples at room temperature when possible
- Defrost and clean refrigerator/freezer
- Keep freezers full, and fill empty spots with ice packs or empty boxes

LIGHTS

- Turn off lights and use daylight or task lights
- Use multi-level light switches appropriately
- Remember to turn off lights when you leave
- Turn hall lights off if standby lights are adequate

COMPUTERS

- Develop a Green IT program
- Enable sleep mode or auto-off on all computers and printers

WATER CONSERVATION

- Reduce single pass cooling
- Use timers for water valves, and set to minimum necessary time
- Use the appropriate quality water
- Install water misers on sterilizers & autoclaves
- Use ice makers, autoclaves, and stills efficiently
- Report dripping and leaking faucets immediately
- Turn off the tap when not in use
- Drink tap or filtered water from your reusable bottle (but don't drink anything in the lab)
- Wash labware efficiently



GREEN LABS CHECKLIST

WASTE REDUCTION

- Recycle printer ink and toner cartridges
- Recycle writing instruments
- Return styrofoam shipping boxes
- Recycle cell phones, batteries, portable electronics, and computer equipment
- Take advantage of vendor recycling and take-back programs
- Recycle lab equipment, per EHRS procedure
- Dispose of hazardous wastes properly
- Reduce paper margins when printing, and set double-sided printing as the default
- Unsubscribe people from junk mailings
- Eliminate the purchase of bottled water
- Recycle traditional single-stream recyclables
- Implement desk-side recycling & centralized trash
- Repair autoclave gloves before buying new gloves
- Reuse foil where possible
- Use reusable glass or plastic bottles, pipettes, petri dishes, and tubes rather than disposable
- Use filter sterilizers that attach to glass bottles rather than disposable bottles



PURCHASING

- Purchase and resell goods on Ben's Attic
- Consolidate orders and eliminate small purchase orders below \$100
- Purchase products that conserve energy
- Purchase products with reduced packaging or purchase products in bulk
- Purchase products with recycled content
- Purchase products with reduced toxic or hazardous chemicals
- Buy chlorine-free paper
- Reuse and recycle paper
- Buy bagged tubes rather than racked tubes with Styrofoam

CHEMICALS

- Maintain and review the chemical inventory to prevent over-purchasing
- Date and use chemicals/reagents as first in, first out

USE GREEN CHEMISTRY PRACTICES

- Scale down procedures to use less hazardous chemicals
- Use more efficient chemical reactions
- Substitute chemicals with less toxic alternatives in experiments
- Use computer simulations as a substitute where possible

ULT FREEZER REBATE PROGRAM

The **Ultra-Low Temperature (ULT) Freezer Efficiency Program** was established to reduce the number of old and under-utilized freezers and incentivize the purchase of more energy-efficient freezers. For application materials, visit the [Penn Sustainability website](#).

HOW TO APPLY

E-mail the completed ULT Freezer Application and appropriate attachments to sustainability@upenn.edu.

Freezer Recycling:
The program provides up to \$500 towards the cost of decommissioning and recycling of the freezer. Proof of appropriate recycling is required to receive the incentive.

New Freezer Purchase:
The incentives for purchasing new freezers are listed below. For a partial list of approved, eligible freezers, please visit the [Penn Sustainability website](#).

Freezer Energy Usage	Incentive Amount
350Wh/day/cu-ft or less	\$2,500
350 to 600 Wh/day/cu-ft	\$1,000

Only ULT freezers that are or will be installed in University-owned and/or operated properties are eligible for this program. Freezers in UPHS facilities are not eligible for this program. For more information, please visit our website: sustainability.upenn.edu.

ULT FREEZER "CHILL UP" PRACTICES

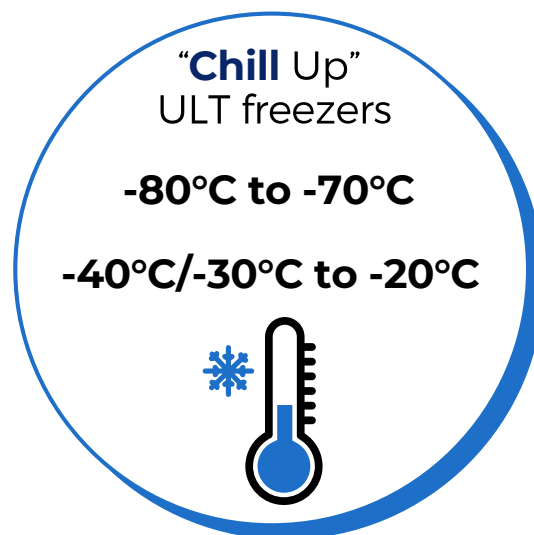
WHY?

Ultra-low temperature freezers are some of the biggest energy users in the lab, and improving freezer practices is a great way to reduce the large carbon footprint of scientific research.

BENEFITS

SAVE ENERGY

- The average -80°C freezer uses 12,000 kwh of energy per year
 - This is the same amount used by one average-sized US family home annually
- "Chilling up" freezers from -80 to -70 and from $-40/-30$ to -20 uses 30-40% less energy with no harm to samples (all temperatures in Celsius)



EXTEND FREEZER LIFESPANS



WILL IT HARM MY SAMPLES?

Before ULT technology was invented, all samples were safely stored at -60 or -70 , and -80 has only become the new standard because of highly effective marketing.

Many studies show that raising freezer temperatures from -80 to -70 does not harm samples, and many research universities have started initiatives to reduce their carbon footprint by improving ULT freezer sustainability

Visit the [CU-Boulder website](#) for more information, including a [spreadsheet of samples](#) successfully stored at warmer freezer temperatures. Other resources include [MIT's Green Labs website](#) and the [UC Davis website](#).

SUSTAINABLE PURCHASING ALTERNATIVES

Below is a list of specific part numbers for sustainable alternatives for commonly used items.

- Buy **bottle top filter sterilizers** that attach to glass bottles rather than disposable bottles
 - Corning #431118**
 - Neta #09-761-50**
- Buy **centrifuge tubes** bagged rather than on Styrofoam racks
 - Usually bagged tube part numbers have a "B" vs an "R" in them, so make sure to buy the ones with **Bs**. You can and should ask your sales reps for clarification.
 - **15 mL centrifuge tubes**
 - Corning #1194-352096**
 - MidSci #C15B**
 - **50 mL centrifuge tubes:**
 - Corning #352070**
 - ThermoFisher #07-200-886**

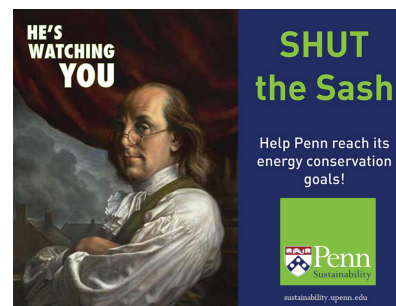
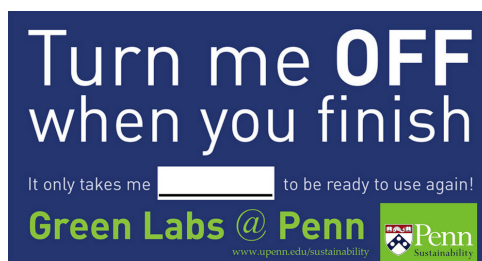
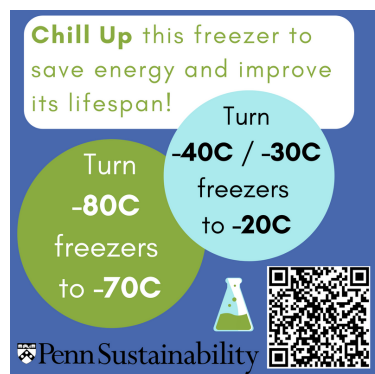
Reusable glass or plastic bottles, pipettes, petri dishes, and tubes can be used rather than disposable items to further reduce single-use waste.

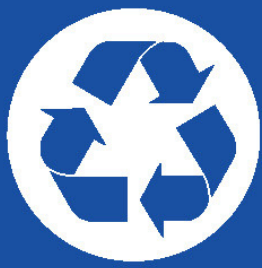
- **Grainger** and **School Specialty** offer affordable **glass petri dishes**.
- **LabScientific** offers affordable **glass pipettes**.
- **Thermo Fisher** offers a variety of **reusable plasticware**.

ACT Label: Created by the non-profit *My Green Lab* to help consumers make smart, sustainable product choices, the virtual ACT Label provides environmental Accountability, Consistency, and Transparency for each labeled product through an environmental impact score. The score is based on the product's environmental impact with regard to manufacturing practices, energy and water use, and end-of-life disposal.

SIGNAGE

Download full-sized PDF versions of lab signage on the [Penn Sustainability website](#).



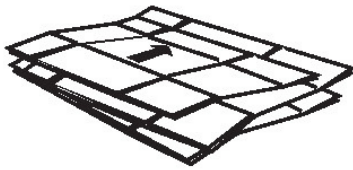


LAB RECYCLING

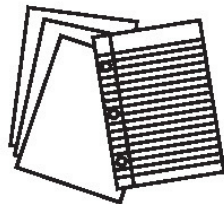
NO RECYCLING FROM TISSUE CULTURE LABS.

**ALL CONTAINERS MUST BE EMPTY AND LABELS DEFACED.
FOLLOW EHRS DISPOSAL GUIDELINES: www.ehrs.upenn.edu**

CARDBOARD & PAPER



Cardboard boxes
(flattened)

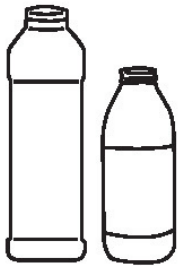


Office paper

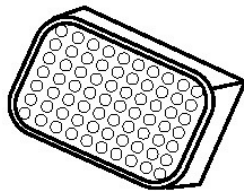


Newspaper

PLASTICS



Plastic bottles
(triple-rinsed)



Tip racks

GLASS

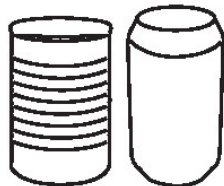


Glass bottles (triple-rinsed and unbroken)

METAL



Aluminum
foil (balled up)

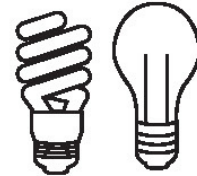
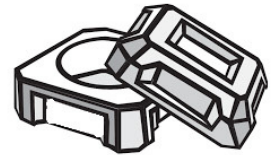


Metal drums
(triple-rinsed)

For more information
on lab sustainability,
please visit
sustainability.upenn.edu.

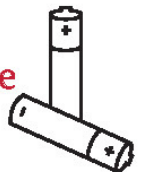
NO

Styrofoam



**Light
bulbs**

**Alkaline &
non-alkaline
batteries**



Electronics



OTHER WAYS TO GET INVOLVED

JOIN THE STAFF & FACULTY ECO-REPS PROGRAM

The Staff & Faculty Eco-Reps Program is a peer education program that educates and empowers participating staff volunteers to be leaders in environmental behavior change. Eco-Reps use knowledge and strategies learned at monthly meetings to implement new practices and spread awareness of sustainability initiatives. They take on a leadership role in their respective offices and departments to help spearhead sustainability projects, create events and informational campaigns, and serve as role models for sustainable practices.



OPERATIONAL SERVICES University of Pennsylvania School of Nursing

has achieved

LEVEL 3

Certification in the Penn Green Office Program for its commitment to implementing sustainable initiatives in the workplace and its support of the University in its efforts to reduce its environmental impact.

October 8, 2019

Dr. Antonia M. Villarruel
Dean
School of Nursing



PARTICIPATE IN THE GREEN OFFICE PROGRAM

Offices can earn points toward Green Office Certification by completing specific sustainability actions. Campus leadership recognizes the efforts of staff and faculty to green their daily activities by offering four levels of Green Office certification. Penn Sustainability staff are available to assist your office in reviewing its operations and selecting the appropriate goal for certification.

For more information on the Staff and Faculty Eco-Reps program, Green Office program, and all other Penn Sustainability programs, projects, and initiatives, please visit our website: sustainability.upenn.edu.