

哈佛大學 綠色實驗室指南(參考)

SAVE ENERGY	節能
<ul style="list-style-type: none"> ● Shut fume hoods when not in use ● Turn off lights when leaving a room ● Label equipment with “turn me off” stickers ● Turn off small appliances when not in use ● Explore purchasing an energy efficient incentivized Ultra Low Temperature (ULT) freezer ● Use a power strip so that groups of appliances can be powered down when not in use ● Keep appliances and frequently used equipment on a routine timer schedule ● Turn off computers (or put in standby/hibernate mode) at the end of each day 	<ul style="list-style-type: none"> ● 排氣櫃不使用時需關閉 ● 離開房間時關燈 ● 設備上貼"關閉我" 的貼紙 ● 小型設備不使用時需關閉 ● 購買節能超低溫 (ULT) 冷凍櫃 ● 使用電源板，當設備不使用時可以將整組設備斷電 ● 在家電和常用設備上，裝設定時裝置 ● 每天結束時關閉電腦 (或進入待機/睡眠模式)
REDUCE WASTE	減廢
<ul style="list-style-type: none"> ● Clarify lab and office recycling procedures; label bins and hang signage ● Participate in and donate to a lab freecycle or the Green Labs Reuse Room ● Recycle equipment that is broken or has reached the end of its usable life ● Properly collect and recycle electronic waste (e-waste) ● Set up double sided printing as the default setting on all computers ● Place a scrap paper bin near the printer(s) ● Set up a composting bin in break room, where possible, and assign a composting captain ● Collect water purification cartridges for recycling through takeback program ● Minimize hazardous waste by applying Green Chemistry concepts to your research ● Report maintenance issues to Building Manager ASAP 	<ul style="list-style-type: none"> ● 明訂實驗室及辦公室的回收流程，貼上容器標籤，掛上指示牌 ● 加入並捐款(設備)給實驗室免費回收網或是綠色實驗室的回收再利用室(Green Labs Reuse Room) ● 回收已損壞或已達到使用壽命的設備 ● 妥善收集和回收電子廢棄物 (e-waste) ● 所有電腦的列印初始設定為雙面列印 ● 在印表機附近放置廢紙箱 ● 在休息室設置廚餘桶，並指定專人負責 ● 收集純化水的濾芯，並經回收計劃循環使用 ● 將綠色化學概念應用於研究，危害廢棄物的產生最小化 ● 儘快向建築物主管(Building

	Manager)報告維護問題
MAINTAIN EQUIPMENT TO MAXIMIZE EFFICIENCY	維持設備最大效能
<ul style="list-style-type: none"> ● Keep your freezers organized; by limiting door openings you will save energy and increase the life of your freezer ● Host an annual freezer cleanout to remove unnecessary samples ● Service your equipment on a routine basis to keep it running optimally and prevent breaks ● Participate in the FAS Freezer Preventative Maintenance Program to get two free cleanings and one full inspection/year ● Clear away any ice buildup on your -80 freezer with a soft cloth or rubber mallet which can be provided by the FAS and Longwood Green Labs Programs ● Keep your -20 freezers free of ice by defrosting at least once per year and by clearing ice from the gaskets periodically 	<ul style="list-style-type: none"> ● 保持冷凍櫃內部整潔並減少開啟，可節省能源並延長冷凍櫃的使用壽命 ● 每年進行一次冷凍櫃清洗，移除不需要的樣品 ● 定期維護您的設備，使其保持最佳運行狀態，預防損壞 ● 參加FAS冷凍櫃預防保養計劃，可以獲得每年兩次免費的清潔和一次全面檢查 ● 可以使用FAS和Longwood Green Labs計劃提供的軟布或橡皮錘清除-80C冷凍櫃上積聚的冰塊 ● -20C冷凍櫃每年至少解凍一次，並定期清理墊圈中的冰
CONSERVE RESOURCES	資源保護
<ul style="list-style-type: none"> ● Share freezer space and equipment with neighbors instead of buying your own ● Learn how to operate the autoclave more efficiently ● Reduce autoclaving needs by introducing a two-streamed process where only required items are autoclaved and other items are run through the dishwasher ● Consider purchasing a solvent recycler for your lab space or sharing one among neighboring labs ● Use reusable dishes in the common room/break area ● Explore the philosophy of Green Chemistry as it may apply to your research 	<ul style="list-style-type: none"> ● 與鄰居分享冷凍空間和設備，不用自己購買 ● 了解如何更有效率地操作高壓滅菌設備 ● 除非必須使用高溫滅菌設備，否則可以洗碗機替代，以減少高壓滅菌的需求 ● 考慮在實驗室購置溶劑回收器或與鄰近實驗室共用溶劑回收器 ● 在公共休息室/休息區使用可重複使用的餐具 ● 應用綠色化學的概念於研究

PURCHASE SUSTAINABLY	綠色採購
<ul style="list-style-type: none"> ● Make energy efficient purchasing choices and purchase Energy Star certified equipment ● Think before you buy: Check out the BioLabs Reuse Room ● Host an annual lab cleanout or spring cleaning ● Use healthier, green cleaning products ● Explore the philosophy of Green Chemistry and browse MIT's Green Chemical Alternatives Wizard ● Ditch the 5-gallon bubblers in your kitchens and switch to a water filtration system ● Purchase recycled content paper and paper towels ● Use GelRed/GelGreen or SybrSafe instead of Ethidium Bromide 	<ul style="list-style-type: none"> ● 購買有節能標章的設備 ● 購買前先查看生化實驗室的回收再利用室(BioLabs Reuse Room) ● 舉辦年度實驗室清潔或大掃除 ● 使用更健康的綠色清潔產品 ● 探索綠色化學的概念，瀏覽麻省理工學院的綠色化學替代品網站(MIT's Green Chemical Alternatives Wizard) ● 在廚房裝設5加侖的(噴水式)飲水口，並轉換為濾水系統。 ● 購買再生紙和紙巾 ● 使用膠紅/膠綠或安全合成溴化的染料(GelRed/GelGreen or SybrSafe)替代溴化乙錠
BUILD A HEALTHIER, MORE SUSTAINABLE CAMPUS	建立一個健康的永續校園
<ul style="list-style-type: none"> ● Share green efforts with new members of your group or lab ● Volunteer to be interviewed as a Green Lab Leader or nominate a leader in your community ● Attend Green Labs Program events throughout the year ● Join the Greener Benches listserv by visiting green.harvard.edu/labs ● Bike, walk, or take public transportation to the lab on a regular basis ● Check out Harvard's holistic Sustainability Plan: green.harvard.edu/plan ● Share photos of your Green Lab actions on twitter and instagram using #GreenHarvard 	<ul style="list-style-type: none"> ● 與您的團隊或實驗室成員分享永續努力的成果 ● 志願以綠色實驗室負責人或社區的領導者的身份接受採訪 ● 參加年度的綠色實驗室計畫 ● 經由green.harvard.edu/labs網站，加入Greener Benches listserv ● 經常騎乘自行車、走路或搭乘大眾交通工具前往實驗室 ● 上網查看哈佛的整體永續計畫，網址green.harvard.edu/plan ● 使用#Green Harvard字串，在社群網站Twitter和IG上分享您綠色實驗室的活動照片

Harvard University Green Labs Guide



“Energy use varies widely across the University, from energy-dense laboratories to offices to student houses, each posing very different challenges in reducing our emissions—yet the problem belongs to all of us.

—JEREMY BLOXHAM, DEAN OF SCIENCE, FACULTY OF ARTS AND SCIENCES



HARVARD
UNIVERSITY

Sustainability

[GREEN.HARVARD.EDU/LABS](https://green.harvard.edu/labs)

The Harvard Office for Sustainability's Green Labs Program works with researchers, staff, faculty, and building managers to envision and implement sustainable practices and technologies that increase efficiency, reduce energy use, and conserve resources in lab buildings across the campus.

Our goal is to expand the concept of the campus as a "living lab" by utilizing the passion of Harvard's laboratory community to operate greener, more sustainable labs that serve as a model for others inside and outside the University.

Because of the resource intensity of research in labs and the unique conditions in each individual lab, sustainability is approached at the lab-specific level in addition to a building-wide perspective.

The Green Labs Program supports several campaigns and initiatives that contribute to Harvard's goals and commitments to confront the challenges of climate change.

While working in the lab please be mindful of how your actions can contribute to the University's efforts.

Visit GREEN.HARVARD.EDU/LABS or email ENERGY@FAS.HARVARD.EDU or SUSTAINABILITY@HMS.HARVARD.EDU to learn how you can help!





SAVE ENERGY



Shut fume hoods when not in use



Turn off lights when leaving a room



Label equipment with “turn me off” stickers



Turn off small appliances when not in use



Explore purchasing an energy efficient incentivized Ultra Low Temperature (ULT) freezer



Use a power strip so that groups of appliances can be powered down when not in use



Keep appliances and frequently used equipment on a routine timer schedule



Turn off computers (or put in standby/hibernate mode) at the end of each day



If you are interested in unique opportunities to reduce energy in your lab or have questions please contact energy@fas.harvard.edu or sustainability@hms.harvard.edu.



REDUCE WASTE

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Service your equipment on a routine basis to keep it running optimally and prevent breaks



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Keep your -20 freezers free of ice by defrosting at least once per year and by clearing ice from the gaskets periodically



If you are interested in unique equipment preventative maintenance opportunities in your lab or have questions please contact energy@fas.harvard.edu.



CONSERVE RESOURCES



Share freezer space and equipment with neighbors instead of buying your own



Learn how to operate the autoclave more efficiently



Reduce autoclaving needs by introducing a two-streamed process where only required items are autoclaved and other items are run through the dishwasher



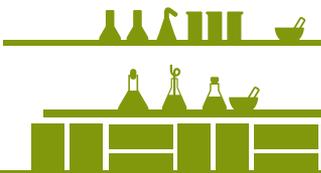
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Explore the philosophy of Green Chemistry as it may apply to your research



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BUILD A HEALTHIER, MORE SUSTAINABLE CAMPUS

-  Share green efforts with new members of your group or lab
-  Volunteer to be interviewed as a Green Lab Leader or nominate a leader in your community
-  Attend Green Labs Program events throughout the year
-  Join the Greener Benches listserv by visiting green.harvard.edu/labs
-  Bike, walk, or take public transportation to the lab on a regular basis
-  Check out Harvard's holistic Sustainability Plan: green.harvard.edu/plan
-  Share photos of your Green Lab actions on twitter and instagram using [#GreenHarvard](https://twitter.com/GreenHarvard)



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