Sustainable Yale

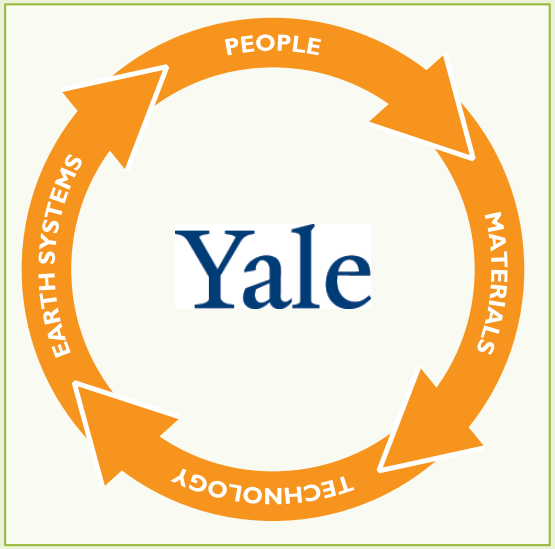
Your guide to more sustainable living at Yale Lab Buildings

Begin

Welcome to the Yale University **Sustainable Yale** Program!

This program will help you learn how to occupy your building more sustainably and guide you through the University's recommended best practices in the areas of:

- Energy & Water
- Waste Management
- Procurement
- Kitchen and Shared Areas
- Travel and Transportation



As a member of the Yale community, your contribution to Yale's sustainability efforts are essential to the University's success in achieving the goals of the Yale Sustainability Strategic Plan.

You can navigate through the program by clicking on each slide:

When you see a bulldog button, click on the bulldog for more information. Click again to hide.

Next Slide

Home

Back

Click on "Next Slide" to advance, "Home" to choose a new area to explore, or "Back" to go back one slide.

At the end of the program, you will find a list of Helpful Links for your reference.

Let's Get Started!

Back

Choose an Area to Explore

Energy & Water

Travel & Transportation

Waste Management

Kitchen & Shared Areas

Building Sustainably at Yale

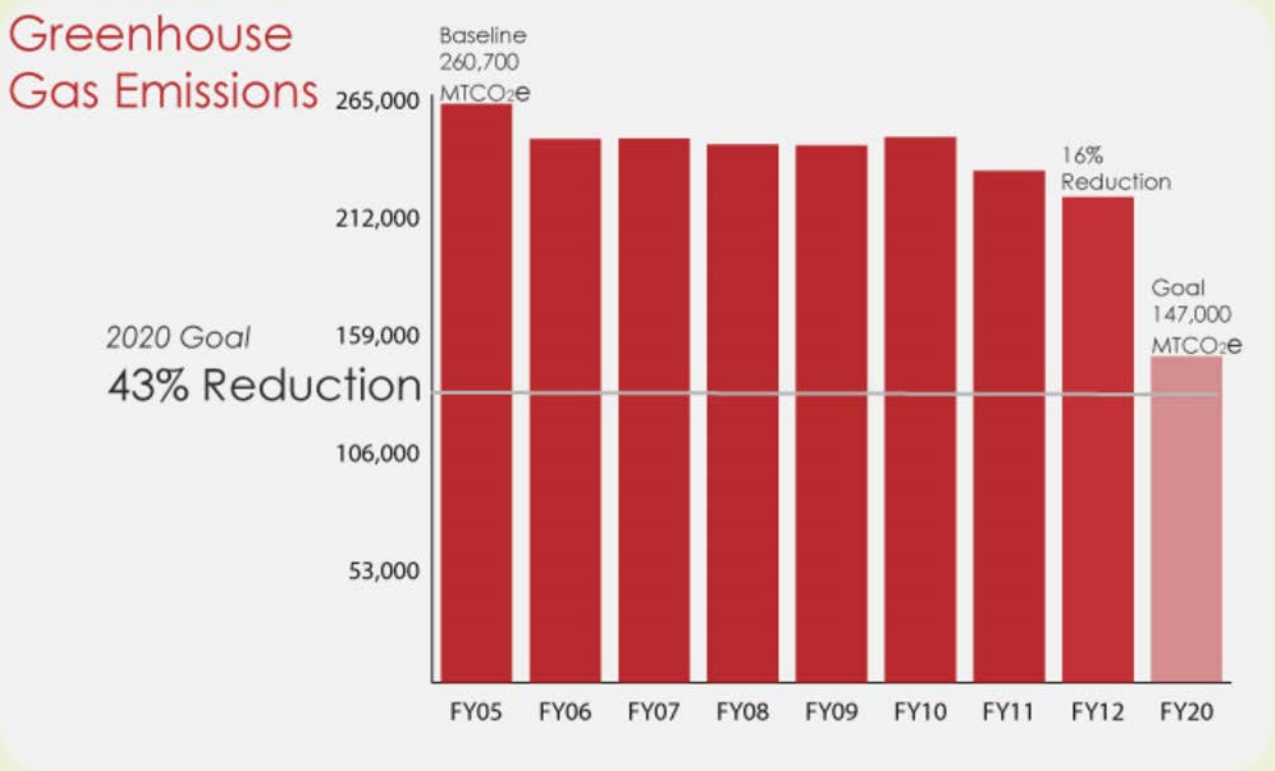
Procurement

Helpful Links

Finish

Greenhouse Gas Emissions

Yale's Sustainability Strategic Plan sets a campus-wide goal to reduce greenhouse gas emissions to 10% below 1990 levels by 2020, a 43% reduction from 2005 levels.



Next Slide

Computers

- To reduce energy use, you can adjust the power management settings on your computer to send your monitor to sleep after 5 to 15 minutes of inactivity. Contact your IT Support Provider for assistance.

Are you signed up for the Tivoli Endpoint Manager application?

- The TEM application is an energy conservation tool offered by ITS.
- It saves energy by automatically sending your computer to sleep mode after 30 minutes of inactivity and following overnight data backups.
- Please contact your IT Support Provider if you would like the TEM application on your computer.

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Did you know? Using the TEM application saves an estimated 359 lbs. of CO_2 emissions per computer per year. With over 8,000 computers at Yale, this is the equivalent to avoiding the annual greenhouse gas emissions from 254 passenger vehicles.

Next Slide

Printers and Copiers

- Printers and copiers are often left on for long periods of time when not in use – this means wasted energy!
- Programming each machine to enter sleep mode after two hours or less of inactivity reduces energy use.
- For help adjusting power saving settings, contact your Yale University Printing and Publishing Services (YPPS) support provider for assistance.

- If your office does not print remotely, you can conserve even more energy by shutting down all copy room equipment completely every night.

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- If your office [illegible] energy by shutting [illegible]

Did you know? The Sustainability Strategic Plan includes a campus wide goal to reduce energy consumption and greenhouse gas emission by 5% below 2013 levels. This will result in a more than 20% reduction in greenhouse gas emission from 2005 levels

Next Slide

Lighting

- Turning off all manually-operated lights, including those in common areas, laboratories, and carrels, when not in use or when daylight is sufficient is a simple but critical energy-saving practice.
- Using compact fluorescent light bulbs (CFLs) in place of incandescent lighting is an easy and effective way to reduce energy usage.
- CFLs use up to 75% less energy and can last up to 10 times longer than traditional incandescent lighting.
- If you would like occupancy sensors to be installed, or for the existing occupancy sensors in your office to turn the lights off after shorter time periods, please contact your facilities superintendent for assistance.

Next Slide

Temperature Management

- Closing your blinds at night helps to trap in heat during the winter and keep heat out during the summer, reducing the amount of energy needed to heat or cool your building.
- You can reduce your energy use by setting the thermostat temperature to Yale's Energy Standards.
- If you are unable to manually adjust temperature settings, contact your facilities superintendent if your office is too hot during the winter or too cool during the summer.
- You can track your own building's energy usage here.

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Did you know? According to the Department of Energy, buildings consume about 38% of the CO2 emissions and 72% of the electricity produced in the United States.

Next Slide

Fume Hood Operation

- Fume hoods are essential for lab occupants' safety but are also extremely energy intensive.
- Please help save energy by closing the fume hood sash when not in use! Closing the sash activates the low-flow, energy-saving ventilation mode, which is critical to reducing overall laboratory energy usage.
- When not in use, fume hood lights should be turned off.

- Yale EHS has an ongoing fume hood inspection process that identifies misused fume hoods, as well as those operating with too high an airflow. After prompt repair and recalibration, the fume hoods are safer for lab occupants and also more energy efficient.

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Did you know? Closing the fume hood immediately after use can save an estimated $1,834 per year and 17,000 pounds of CO2 for a typical 6 ft. fume hood.

Next Slide

Optimizing Ventilation

- To maintain efficient airflow in and around the Biological Safety Cabinet, the cabinets should be kept uncluttered and the area above them clear.
- To maximize efficient room ventilation, laboratory equipment and material should be stored more than 5 feet away from any overhead diffusers.

- Keeping laboratory doors closed as much as possible allows the room ventilation system to run as designed by keeping the lab under a slight negative pressure to the hallway.

Next Slide

Water Use in the Laboratory

- Water aspirators and single-pass cooling water systems should not be used anywhere at Yale University due to the high volumes of waste water these systems generate.
- For efficient water use, glassware washers and/or autoclaves should only be run when full.
- Only turn on water baths when they are needed or designate someone in your lab to turn on the water bath each morning and turn it off each evening. This will save both water and energy.

- Only use distilled water when necessary. The distillation process is extremely water and energy intensive because it requires heating water to its boiling point and then cooling the water vapor back to a liquid state.
- When washing equipment, consider using tap water for the initial wash and distilled water for the rinse.

Next Slide

Laboratory Freezers

- By maintaining an up-to-date inventory of freezer contents in the laboratory, a lab can reduce the amount of time each freezer unit is kept open when searching for contents.
- Regularly reviewing freezer contents and removing unwanted material will free up space in existing units and prevent the purchase and operation of unnecessary additional units.
- Are the freezers in your lab on service maintenance contracts? Clean coils provide maximum heat exchange, and regular maintenance allows freezers to operate most efficiently.

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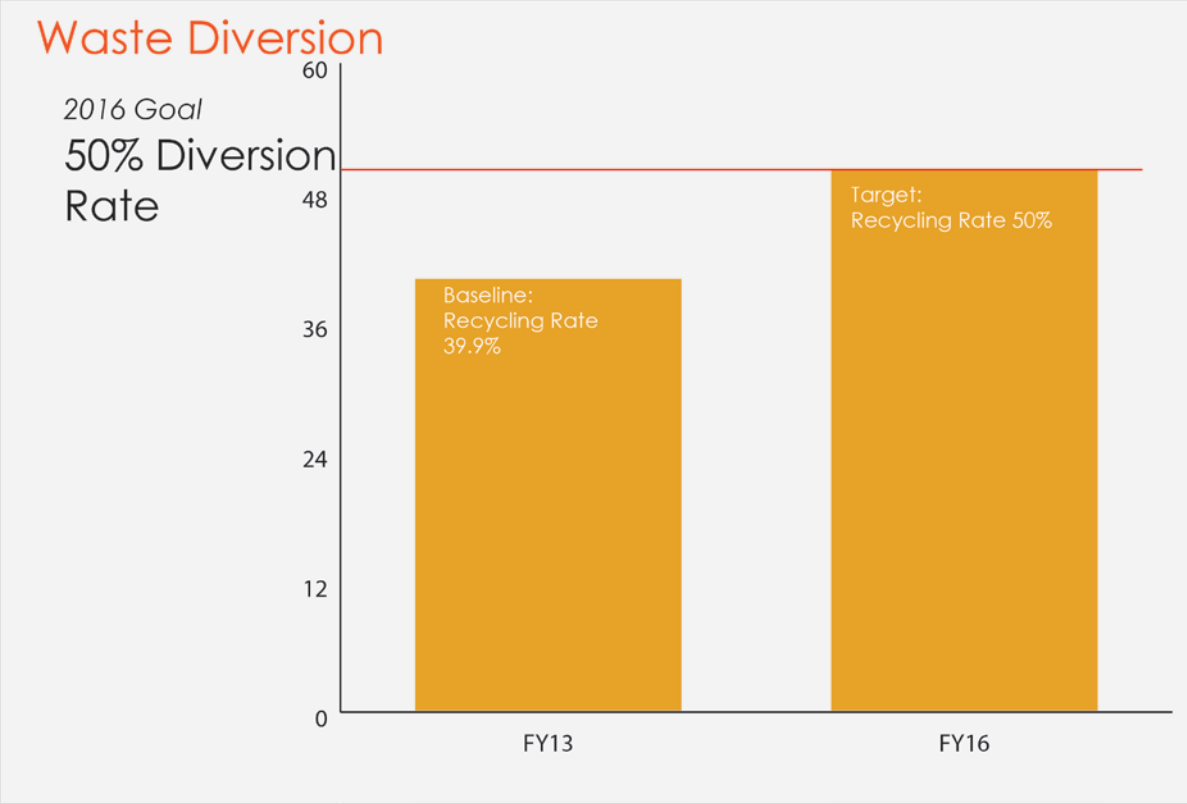
Did you know? Yale Environmental Health and Safety has developed a Green Laboratories Certification program. Find out how your laboratory space can get certified here.

Next Slide

Recycling & Waste Diversion

Yale's Sustainability Strategic Plan sets a goal to achieve a 50% waste diversion rate through reuse, recycling and composting by June 30, 2016.



Next Slide

Single Stream Recycling

- Yale's recycling is now single stream!
- You can recycle all paper, metals, plastics, and glass together – no sorting necessary.
- Please visit the Yale recycling website for a complete list of what can be recycled.
- If your office is missing a recycling bin, please call or email the Central Customer Service Center at (203) 432-6888 or centralcsc@yale.edu.

Next Slide

Desk-Side Waste and Recycling

No Food in Desk-Side Bins!

- To avoid odors, pests, and possible overflow, please continue to place **only mixed paper** in your **desk-side recycling** bin.
- In your **desk-side trash bin**, place only **non-food** trash items. All other recyclables (cans, bottles, food containers, etc.) should be placed in common area single stream bins.
- Please deposit all non-recyclable food and beverage trash in the appropriate bin away from your desk area.

Next Slide

What Paper Can Be Recycled?

- Many different kinds of paper that you use on a daily or weekly basis can be recycled – such as magazines, envelopes, and sticky notes.
- No need to worry about paper clips and staples – they can be recycled as well.
- Cardboard boxes should be **flattened** and stacked next to a recycling bin for proper recycling.

O.K. to Recycle

- Remember that the following paper items DO NOT go in the recycling bin:
  - Tissues
  - Wax Paper
  - Food residue

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Did you know? You can find out all you need to know about recycling at Yale at http://recycling.yale.edu/.

Next Slide

What Plastic, Glass, and Metals Can Be Recycled?

- All plastics (except plastic wrap) can be recycled
- Lids can be recycled too, but must be removed from their containers first!
- Before placing cans, bottles, aluminum foil or recyclable food containers in the recycling, please remember to **rinse each item** of any food residue. Otherwise the item may be discarded at the recycling facility!
- Remember that the following items DO NOT go in the recycling bin:
  - Styrofoam
  - Plastic Bags
  - Light Bulbs (including CFLs)
  - Food residue
  - Ceramics

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Did you know? Instead of throwing away old pens and pencils, collect them in a Pen Pail, which collects old writing instruments for recycling or reuse. To request a Pen Pail, contact the Office of Sustainability at sustainability@yale.edu.

- Ceramics

Next Slide

Recycling in the Lab

What lab items CAN be recycled?

- Pipette tip boxes
- Aluminum foils & trays
- All glass, plastic or metal containers that are triple rinsed and defaced that once contained liquid chemicals can be recycled. (Exceptions include any acid, base or acutely hazardous (P-list) chemical container. Plastic safety coated glass bottles cannot currently be recycled.)

What happens to solvents?

- All solvents are bulked into 55-gallon drums and sent off-site for disposal through incineration. The incineration process is used to fuel cement kilns.
- Departments can also purchase their own solvent recycling systems and can recycle ethanol and xylene for reuse.

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You can check which chemicals are classified as acutely hazardous by reviewing the P-list in Appendix A of EHS' Management of Hazardous Waste manual. Just click here and go to page 19.

Next Slide

Recycling in the Lab

What lab items can NOT be recycled?

- Pyrex
- Items containing biological, radiological or chemical materials
- Sharps
- Rubber Gloves
- Block foam (e.g. styrofoam)
- Items not specified as recyclable
- Rubber coated chemical bottles
- Plastic safety coated glass bottles
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Did you know? You can find out more about reducing plastic use in the lab here.

Next Slide

Managing Laboratory Waste Streams

- Chemical waste generated by laboratory experiments must be separated by class for proper disposal, including the separation of:
  - organic wastes from metal-containing or inorganic wastes.
  - non-hazardous chemical waste from hazardous waste.
  - highly toxic waste (cyanides, etc.) from all other waste.
- Experiments that produce waste that contains both radioactive and hazardous chemical waste (“mixed waste”) should be kept to an absolute minimum.

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Did you know? Yale EHS provides an extensive list of ways to reduce chemical hazardous waste in the lab. Find out more here.

Next Slide

More Tips for Waste Management in the Lab:

- It is essential that you DO NOT throw regular trash into the hazardous waste receptacles!
- When feasible, try utilizing computer simulations and/or micro-scale techniques to reduce per use quantities of chemicals. Learn more here.
- If your lab has not done so already, consider implementing chemical recovery, recycling, or purification systems for substances such as acetone, xylene, or alcohol.
- Use the least hazardous cleaning method for glassware. Use detergents such as Alconox, Micro, RBS35 on chemically contaminated equipment before using KOH/ethanol bath, acid bath or No Chromix.

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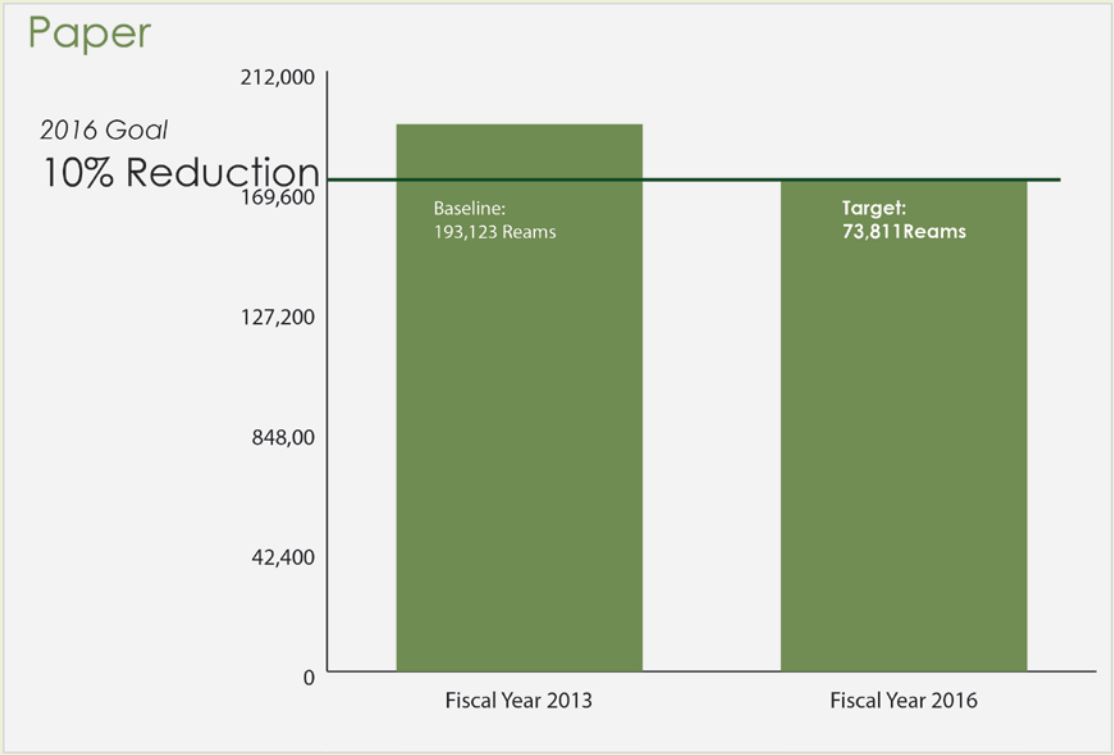
Has your lab eliminated wet processing of x-ray and other films? Wet film processing uses high quantities of water and chemicals and can generally be replaced with digital technology.

Next Slide

Paper Consumption

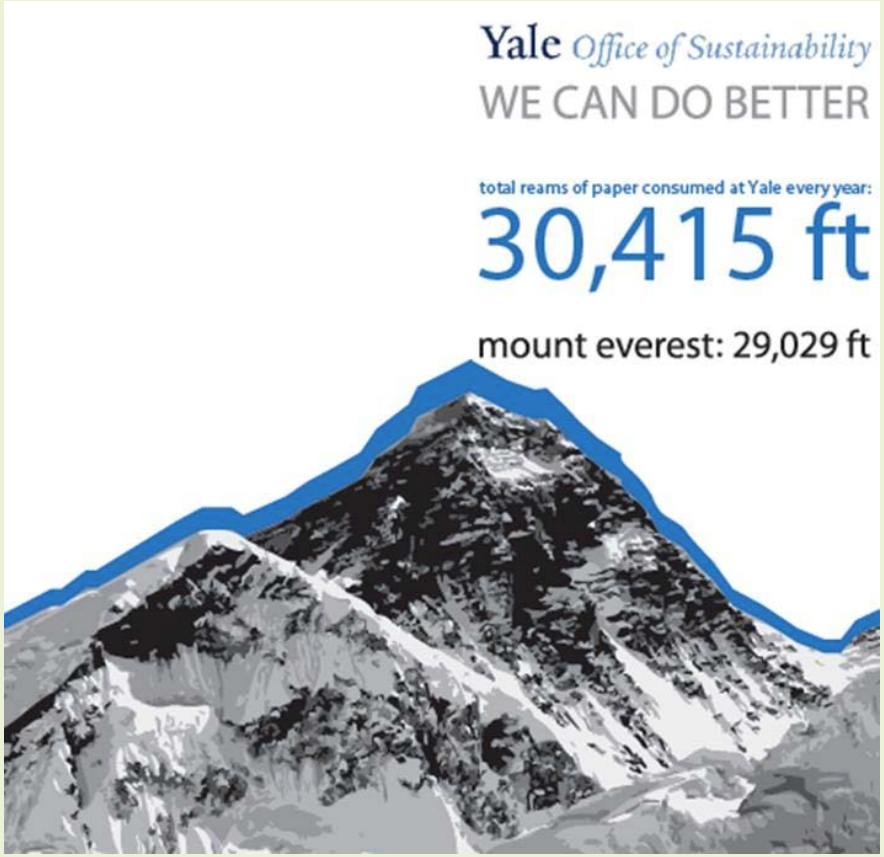
Yale's Sustainability Strategic Plan sets a goal to achieve a 10% reduction in the purchase of copy paper for printing and copying below 2013 levels by June 2016.



Next Slide

Reduce Paper Consumption

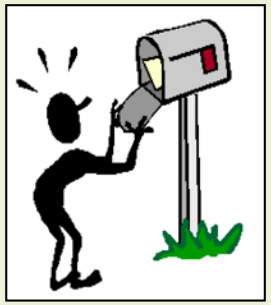
- If you stacked all the reams of paper consumed by Yale in one year, the stack would reach 30,415 ft. That's taller than Mount Everest!
- The 2013-16 Strategic Plan goal is to reduce paper purchases by 10% below 2013 levels by June 2016.
- By reaching this goal we would save approximately 3,500 trees, equivalent to a forest area twice the size of Old Campus.
- Find out more interesting facts about paper consumption and waste management at Yale.



Next Slide

Tips to reduce paper consumption:

- Use electronic communication instead of circulating paper, when appropriate.
- Use and reuse interoffice envelopes in place of regular envelopes, when possible.
- Print double-sided (duplex setting).
- Print 2-up (two reduced sized pages per sheet of paper).
- Read on-screen instead of printing a hard copy.
- Contact your IT Support Provider if you would like assistance with setting your printing default options.



Take advantage of Yale's Junk Mail Program to reduce your unwanted mail. For any periodicals or mailings you do not wish to receive, follow the procedures as outlined by the Yale Mail Service and you will be removed from the appropriate mailing lists.

Next Slide

Additional Printing Suggestions

- When printing documents, try using EcoFont, which uses up to 25% less ink than conventional fonts.
- If EcoFont is not currently installed on your computer, contact your IT Support Provider for assistance.
- You can also save ink by selecting draft quality when suitable.
- Try to print in color only when necessary.

Next Slide

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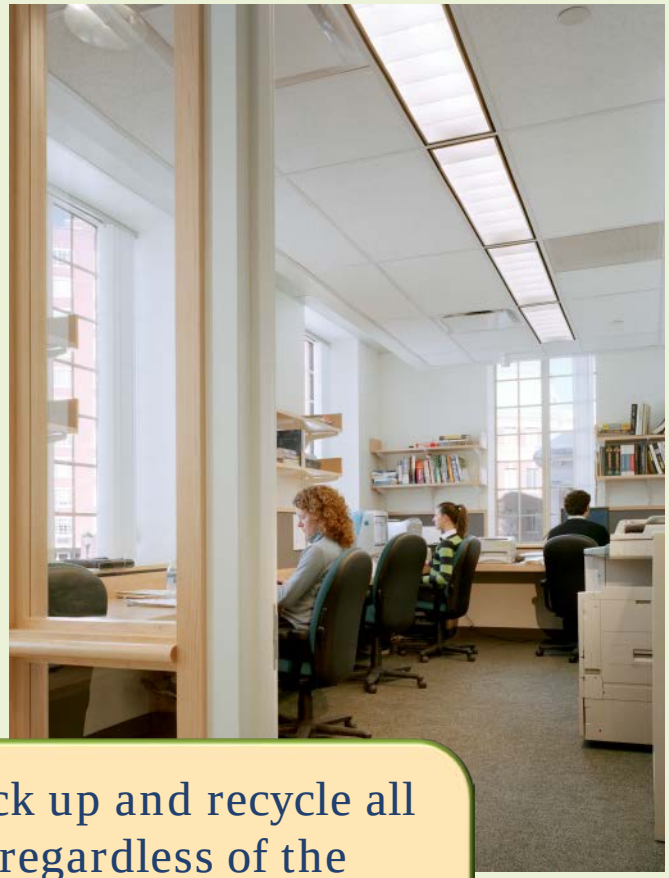

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- If EcoFont is not currently installed on your computer, contact your IT Support Provider for assistance.
- You can also save ink by selecting draft quality when suitable.
- Try to print

Did you know? WB Mason will pick up and recycle all used printer and toner cartridges regardless of the manufacturer. For recycling, please place used cartridges in a cardboard box and leave it in the area where your office supplies are delivered.

Next Slide

Universal Waste

- Universal waste includes compact fluorescent bulbs (CFLs), computers, certain electronics, chargers, and non-alkaline batteries.
- All universal waste should be disposed of through the Office of Environmental Health and Safety. Universal waste pick-ups can be scheduled online here or contact your Facilities Superintendent for assistance.
- Between pickups, CFLs should be stored in a small box to prevent breakage.
- Alkaline batteries *can* be disposed of in the normal trash or collected by EHS. However, other batteries such as **lead acid, lithium, rechargeable and button** batteries are universal waste and each battery MUST be stored separately in a plastic bag or taped with electrical tape on each end, prior to pickup by EHS.

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Did you know? On average, Yale Environmental Health and Safety recycles approximately 200,000 lbs. of used electronics each year. Find out more about how Yale Environmental Health and Safety is helping with campus sustainability.

Next Slide

Paper and Ink Purchasing

- Yale has established a university-wide standard for using office paper with a minimum of 30% post-consumer recycled content.
- Purchasing recycled toner cartridges allows your office to save money while also helping the environment.
- Yale has negotiated terrific savings on 30% post-consumer recycled paper and recycled toner cartridges through WB Mason.

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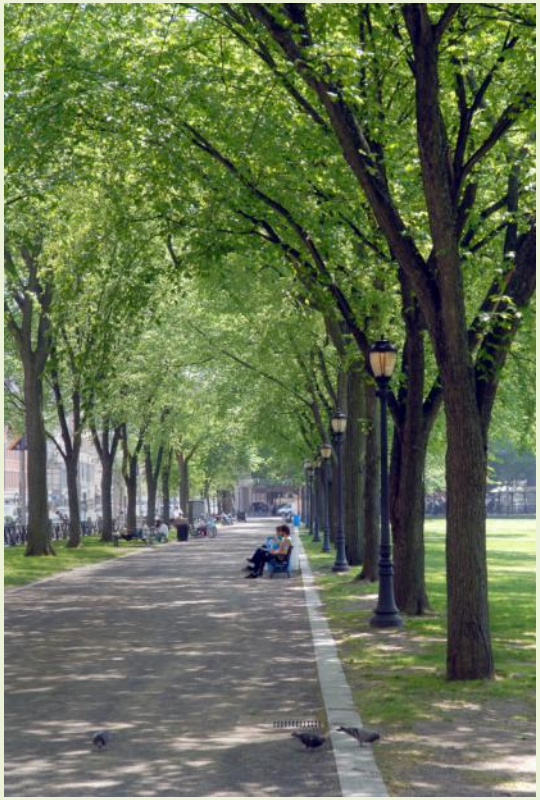
Need more information about Green Purchasing at Yale? Please email purchasing.helpdesk@yale.edu for more information.

Next Slide

How much are we saving by purchasing recycled paper?

- For every ton of 30% recycled-content paper used at Yale instead of virgin paper:
  - 7 trees
  - 632 lbs. of CO2
  - 2,625 gallons of water
- ...and if we use 100% recycled-content paper instead of virgin paper:
  - 24 trees
  - 2,108 lbs. of CO2
  - 8,750 gallons of water



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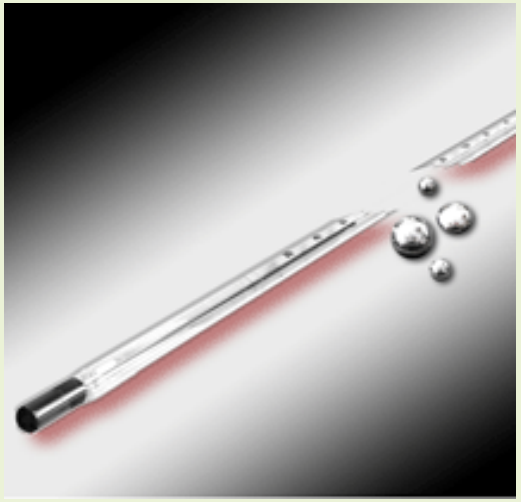
Mercury Reduction



- Mercury is a highly toxic element that is extremely harmful to human health and the environment.
- If mercury thermometers are used in your laboratory, help prevent the accidental release of the toxic metal by exchanging the mercury thermometers with less toxic alternatives through the Medical Stockroom or the Chemical Stockroom.
- For every one mercury-containing thermometer that is returned, the lab personnel will receive a free red spirit thermometer (-20C to 110C in 1 gradients).
- Visit the Yale EHS website for more information.

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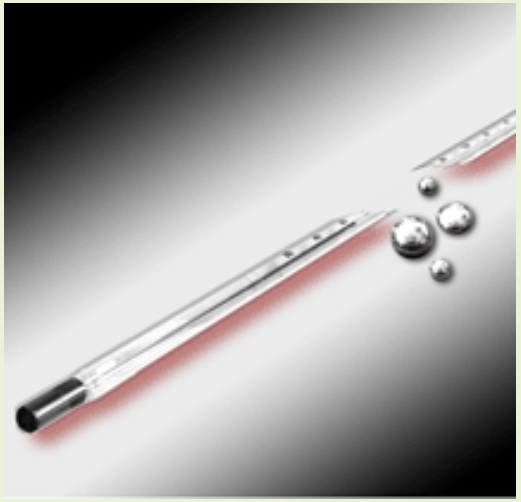

- For every one mercury-containing thermometer that is returned, the lab personnel will receive a free red spirit thermometer (-20C to 110C in 1 gradients).
- Visit the Yal

Did you know? Tests show that the model of red spirit thermometer used in the EHS exchange program equals or exceed the accuracy and precision of ordinary mercury thermometers.

Next Slide

Chemical Purchasing

- In place of high hazard chemicals, consider using less hazardous and more environmentally friendly alternatives when feasible, such as:
  - detergents instead of acids for glassware washing
  - non-hazardous liquid scintillation fluids
  - replacing oil-filled vacuum pumps with dry air
  - water-based solvents in place of organic solvents
- Please visit the Yale Environmental Health and Safety website for a full list of recommended chemical substitutions.
- Please visit the Eli Surplus Exchange website for available surplus chemicals. If you have any unopened, non-expired chemicals available for redistribution, please call Environmental Affairs at 203-432-6545.

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For ideas on environmentally friendly lab purchasing, visit http://web.mit.edu/workinggreen/buy/lab.html

Next Slide

Orders and Deliveries

- Having an accurate inventory of chemicals in the lab allows lab members to review the existing chemicals available before ordering new chemicals, reducing the chance of duplicative orders.
- Establishing a central location where any extra office supplies can be shared between colleagues lessens the amount of new supplies that need to be ordered.
- To reduce the frequency of campus deliveries, communicate with other office members before placing an order so that deliveries can be consolidated as much as possible.
- Reducing the number of deliveries to your office will save shipping materials and reduce emissions from transportation.
- Try limiting deliveries to once a week or less.

Next Slide

Furniture and Equipment

- When buying new computers or other office machines, Yale recommends purchasing ENERGY STAR or EPEAT rated electronics, which have lower energy requirements than conventional models.
- Before buying new office furniture, first check out Yale's Eli Surplus Exchange to see if you can find used furniture that will meet your needs. You can also donate or sell furniture (and other items as well).
- For other ways to reuse visit Yale Recycling web site here.
- If new furniture is necessary, new purchases should meet green products standards such as Cradle to Cradle or Indoor Advantage as specified in Yale's Sustainable Procurement Standards.

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Did you know? Yale follows Sustainable Procurement Standards for office supplies, furniture, equipment, and other products. You can access the guide here.

Next Slide

Drive Less

- Yale's Sustainability Strategic Plan includes the goal to reduce reliance on single-occupancy vehicles for travel to and from campus by 2% below 2013 levels by June 2016.
- You can help the university achieve its goal by relying on other transportation methods for your commute to campus, such as walking, carpooling, biking, and public transportation.
- Using video or teleconferencing instead of traveling to in-person meetings, when appropriate, saves time, money, and reduces vehicle emissions.
- Real time shuttle locations can be viewed online or on your smartphone.

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- Real time shu
on your smart

What are your alternatives to driving alone? Find out by filling out the "Commuter Counseling Form" offered by Yale Transportation Options. You can also visit the Transportation Options website for more information.

Next Slide

Y-Bike

- Biking on campus is a great way to reduce automobile use and enjoy some exercise.
- Yale's departmental bike sharing program, Y-Bike, provides free commuter bikes to departments looking for a better way to get around campus. There's free parking at every destination!
- The bicycles come fully-equipped with fenders, lights, bell, rack, rear basket, odometer, combination U-lock and helmet.
- Find out more about Y-Bike.

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Did you know? Since the Y-Bike program's inception in May 2008, the shared bikes have collectively logged over 6,500 miles.

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Biking

- Bike racks are located at most buildings on campus. Get more info on biking at Yale, and a map of bike rack locations at http://to.yale.edu/bike
- Don't have a bike? "Zagster" bike share program has come to Yale!
- Bikes are located at various bike racks around campus. Reserve online or by texting "Zagster" at the bike. Enter the garage through the pedestrian door to the right of the car entrance. You can become a member at www.zagster.com/yale

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Did you know? If you register for the Yale Bicycle Safety class offered through Yale Environmental Health & Safety, you will be reimbursed for the $20 "Zagster" membership fee, learn safe urban cycling skills, and get a free helmet!

Next Slide

Zipcar

- Zipcars are ideal for short trips and errands, and eliminate your need to have a car on campus.
- If other modes of transportation are not available, try using one of over 30 Zipcars available to Yale students, faculty, and staff.
- Yale has partnered with Zipcar to offer Yale students and staff yearly discounted memberships. Find out more or go directly to Zipcar to sign up.

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Did you know? AAA estimates that it costs $5,636 - $11,721 to own and operate your car annually. Sharing a car or having fewer cars per family would save you thousands of dollars per year.

Next Slide

Kitchen Supplies

- Using reusable plates, cups, utensils, and napkins significantly reduces the amount of waste an office generates.
- If paper products are supplied in your office, purchasing those with at least 50% post-consumer recycled content is recommended.
- When buying dishwashing soap and cleaning supplies, look for products that are biodegradable, non-toxic, and non-petroleum based.

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Green cleaning products are easy to find! Common brands include Seventh Generation, Biokleen, and Mrs. Meyers Clean Day.

Next Slide

Green Cleaning at Yale

- Yale's Green Cleaning Program incorporates environmentally benign cleaning products with appropriate equipment, tools, and procedures that limit environmental and human health impacts. The green cleaning program embraces the cleaning process in its entirety and includes an emphasis on education and training of workers.

- Whenever possible, Yale uses Green Seal certified or Green Seal recommended products. If such a product is not available, Yale selects a product that is environmentally friendly and safe, as determined by Yale Environmental Health and Safety.

- Yale is currently testing a variety of new green cleaning products and procedures, as it continually strives to improve the health and safety of its students and workers while simultaneously reducing its environmental impact.

- Find out more about Yale's Green Cleaning Program here.

Next Slide

Water Conservation

- Consider these facts:
  - It takes three liters of water to produce one liter of bottled water.
  - The energy required to produce and transport one bottle of water can be as high as the equivalent of filling a plastic bottle 1/4 full of oil.
- Rather than using bottled water, you can help the environment by drinking filtered tap water.
- Please use a reusable water container instead of a disposable cup when possible.

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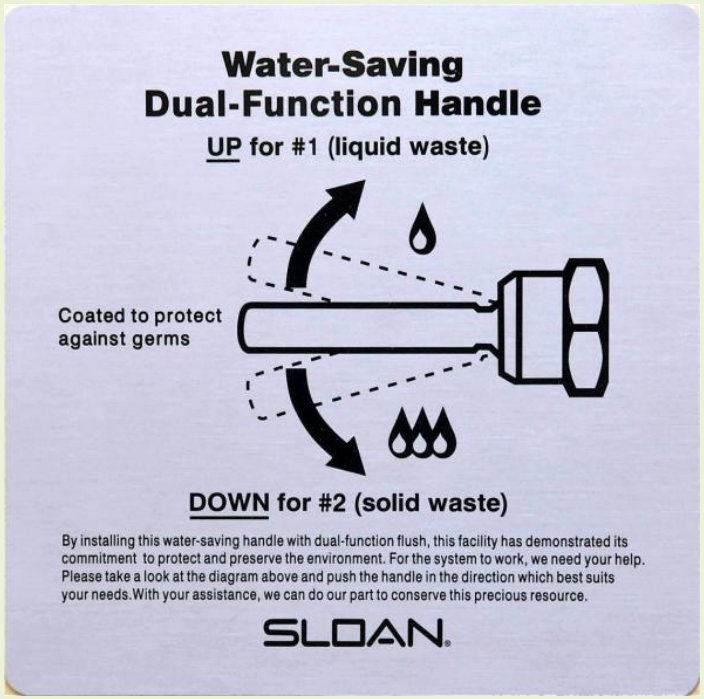
Did you know? New Haven tap water is perfectly safe. In fact, studies nationwide have consistently shown that tap water, which is strictly regulated by federal water quality standards, is just as safe as bottled water – if not more so.

Next Slide

Dual Flush Toilets

- Around campus you may find dual flush toilets, which are more water efficient than standard toilets.
- To use the fixture properly, lift the handle up for liquid waste or push it down for solid waste.



- Lifting the handle up uses 1.1 gallons per flush, while pushing down uses 1.6 gallons per flush.
- Each liquid waste flush saves 0.5 gallons of water compared to the standard flush – a reduction of over 30%.

Next Slide

Building Sustainably at Yale

- Yale University has a commitment to building sustainably for all construction and renovation activities.
- In 2009, Yale published its Sustainable Design Requirements, requiring all new construction or comprehensive renovation projects to achieve LEED Gold or higher.

- Sustainable design features in Yale's LEED certified buildings can include geothermal heating, solar panels, dual flush toilets, rainwater harvesting, and natural landscaping.

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- Yale University has a commitment to building sustainably for all construction and renovation activities.
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- Sustainable design features in Yale's LEED certified buildings can include geothermal heating, solar panels, dual flush toilets, rainwater harvesting, and natural landscaping.

Did you know? There are now over 20 LEED certified building projects on the Yale University campus. Click here to learn more about Yale's green buildings.

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Helpful Links

Yale Office of Sustainability	http://sustainability.yale.edu/
Yale Office of Facilities	http://facilities.yale.edu/
Green Workplace Certification	http://sustainability.yale.edu/workplace
Green Labs Certification	http://www.yale.edu/ehs/sustainability/greenlabs.htm

Energy

IT Support at Yale	http://www.yale.edu/its/help/supportgroups.html
Yale Energy Standards	http://www.facilities.yale.edu/energyGuide.shtml
Building Energy Tracker	http://java.facilities.yale.edu/public/Energy.html
Facilities Superintendent Map	http://www.facilities.yale.edu/publications/FacSuperMap.pdf

Waste Management

Yale Recycling	http://recycling.yale.edu/
Junk Mail Program	http://www.yale.edu/campusmail/JunkMail.htm
Yale EHS Sustainability	http://www.yale.edu/ehs/sustainability/intro.htm
Surplus Furniture Program	http://www.yale.edu/trs/surplusitems.htm
TerraCycle	http://www.terracycle.net/

Procurement / Kitchen & Shared Areas

Yale Procurement Office	http://www.yale.edu/procurement/
Yale University Buying Guide	http://buying-guide.yale.edu/
Green Cleaning at Yale	http://www.facilities.yale.edu/publications/GreenCleaning.pdf

Travel and Transportation

Yale Transportation Options	http://to.yale.edu/
Commuter Counseling Form	http://to.yale.edu/commuter-counseling
Y-Bike	http://to.yale.edu/bicyclingprogram
Zipcar at Yale	http://to.yale.edu/zipcar
Zagster Bike Share Program	http://www.zagster.com/yale

Thank you for your participation!

We appreciate your time and attention.

If you would like to help us improve our program, please take a minute to give us your feedback in a short survey.

Click here to take the survey