Suggestions and Strategies for Creating and Growing Green Labs Programs

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Suggestions

1. Find champion scientists & build from there
Strategy: Personal Outreach to Start

PERSONAL TOUCH!

Eco-Leaders = engaged insiders

What do they want to address?

Leadership from the inside

Truth is... there are many lab members that care about their consumption.
Strategy: Use positive, public recognition

2015 CU Green Labs Award Recipients

Give Your Compressor a Break!
Increase the temperature of your ULT (Ultra Low Temperature) Freezer to -70°C

-70°C
-80°C

2-4 kWh/day saved
same as a LCD TV

Save Energy While Extending Freezer Lifetime
• Increasing the temperature means the compressor does not have to work as hard.
• Since the compressor works less, there is reduced risk for compressor failure.
• 34 ULT freezers at CU-Boulder and 40 at UC-Davis are already at -70°C or warmer.

Join These CU-Boulder Labs That Are Already at -70°C
• Anseth • Copley • Martin • Schmidt • Taatjes
• Blumenthal • Ehringer/Marks • Moore • Shen • Winey
• Chen/Junge • Garcia • Poyton • Smolen • Xue
• Collins/Sitzel • Han • Seals • Stein

For info on samples that labs are storing at -70°C or warmer go to ecenter.colorado.edu/greenlabs

CU Green Labs Contact:
Kathy Ramirez
greenlabs@colorado.edu
303.492.5563
Suggestions

1. Find champion scientists & build from there
2. Raise awareness
Strategy: Posters, Contests, Meetings

Modified graphic from Univ. of Toronto Sustainability Office
Our most effective place to hang posters

Also in bathroom stalls.
Suggestions

1. Find champion scientists & build from there
2. Raise awareness
3. Include & collaborate with other stakeholders
Strategy: Win-win opportunities

- **EH&S**: BSCs, freezer inventory, fume hood sashes
- **Fac. Management**: fume hoods, equip. placement, doors closed
- **VC of Research**: shared instrumentation site

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Be Safe & Energy Wise with Biosafety Cabinets (BSCs)

BSCs are required to be certified annually OR when moved/repai red

Increase your filter lifetime & save energy

→ **Turn Off Blowers Between Uses**

Follow these important guidelines to be safe and sterile:

1. After use, ethanol wipe and wait 5 minutes for air to filter before turning off blower
2. Before beginning work, let the blower run for 5 minutes to filter the air and do an ethanol wipe

NIH, CDC, & NSF do NOT recommend
UV lights → **False Sense of Security**

1. Only the top layer of cells is killed by the 253.7 nm UV light which has limited penetrating power
2. UV light effectiveness reduces as lamp intensity diminishes over time and dust builds up
3. UV light can damage eyes and skin

Don’t forget to clean under the pan
Ethanol wiping is not only important for those surfaces you see, but also for underneath:

1. Decontaminate ALL surfaces inside the cabinet (even under the pan) with ethanol or other suitable disinfectant
2. Always follow the manufacturer’s instructions when using a BSC to maximize the protection of the personnel, the material on the work area, and the environment

For questions regarding biosafety cabinets, please contact the biosafety group in EH&S at 303-492-6025

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Facilities Management
Green Labs, Environmental Health and Safety
Environmental Services
Climate Change
Strategy: Regular check-ins with stakeholders to build partnerships
Suggestions

1. Find champion scientists & build from there
2. Raise awareness
3. Include & collaborate with other stakeholders
4. Be a resource to labs
Strategy: Find needs and fill them

- ULT failure help
- Mobile freezers
- Property disposal
- Research efficient equipment
- Give scientists a voice
Strategy: Listen to what lab members want to address
Suggestions

1. Find champion scientists & build from there
2. Raise awareness
3. Include & collaborate with other stakeholders
4. Be a resource to labs
5. Connect occupants financially with their energy, water, trash, and space use
Strategy: Connect depts w/ consumption

- Began FY ’12-13
- 27 operating units
- ‘10-’11 electrical static baseline
- Saved $870,000 FY ’12-13 (8.35 GWh)
- Saved $1,000,000 FY’13-’14

Energy saved by connecting depts with consumption:

- Occupants receive $ savings
- Occupants pay $ difference (starting 2014-2015)

Resource: Chuck Frost, UC-Berkeley Utilities
Strategy: Purchasing Incentives

Up to 5 yrs of energy or water savings:

- Equipment replacements
- New equipment

We have funding to help labs!

$$ for energy efficient lab equipment
$$ for conservation efforts in labs

Reach out to CU Green Labs for Facilities Management dollar incentives for your lab
Low Temp Environmental Chamber: 5.5°C and Lighting

33.2 kWh/day

11.2 kWh/day

66% reduction in electricity

$3252 incentive = 5 yrs electricity savings
Suggestions

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2. Raise awareness
3. Include & collaborate with other stakeholders
4. Be a resource to labs
5. Connect occupants financially with their energy, water, trash, and space use
6. Utilize national/international groups & resources
Strategy: Reach out & collaborate with Green Labs Community

- International Institute for Sustainable Labs (I2SL)
- Green Labs Planning Google Group
- Safe, Successful, Sustainable Labs
Suggestions

1. Find champion scientists & build from there
2. Raise awareness
3. Include & collaborate with other stakeholders
4. Be a resource to labs
5. Connect occupants financially with their energy, water, trash, and space use
6. Utilize national/international groups & resources
7. Justify funding with metrics
Strategy: Use Consumption Data
Already Available
Strategy: Incremental, shared budget growth

Environmental Center

Facilities Management
Suggestions

1. Find champion scientists & build from there
2. Raise awareness
3. Include & collaborate with other stakeholders
4. Be a resource to labs
5. Connect occupants financially with their energy, water, trash, and space use
6. Utilize national/international groups & resources
7. Justify funding with metrics
8. Leverage additional funding sources
Strategy: Green or revolving fund

Sustainable CU Grants:

- Freezer Challenge
- Green Chem Fund
- Solvent distiller
- Collection containers for recycling
- Flammable freezer
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6. Utilize national/international groups & resources
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8. Leverage additional funding sources
9. Catch people when they first arrive on campus
Strategy: Graduate student orientations and welcome person for new hires

Welcome New Graduate Students
Suggestions

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3. Include & collaborate with other stakeholders
4. Be a resource to labs
5. Connect occupants financially with their energy, water, trash, and space use
6. Utilize national/international groups & resources
7. Justify funding with metrics
8. Leverage additional funding sources
9. Catch people when they first arrive on campus
10. Pilot before doing a campus-wide launch
Strategy: Pilot in engaged, flexible labs/depts that can handle bumps
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6. Utilize national/international groups & resources
7. Justify funding with metrics
8. Leverage additional funding sources
9. Catch people when they first arrive on campus
10. Pilot before doing a campus-wide launch
11. Hire leadership that understands lab culture & dynamics
Strategy: Choose a program manager that has experience as a lab scientist.
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6. Utilize national/international groups & resources
7. Justify funding with metrics
8. Leverage additional funding sources
9. Catch people when they first arrive on campus
10. Pilot before doing a campus launch
11. Hire leadership that understands lab culture & dynamics
12. Allow others to lead
Strategy: Hire Grad Students to Lead

GREEN LABS TEAM LEAD
paid **grad student** leading Eco-Leaders & working on efforts within his/her own department or building

- Passionate insiders
- Important department members
- Have chair support
- ~5 hours per month
- Influential voices
- Great on a resume
Building a culture of sustainability in an academic chemistry department: Formulation and implementation of green chemistry practices on a broad scale

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