



my green lab  
certification.

Your Organization

Your Lab

Assessment Feedback Report

Prepared by

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Tuesday, February 25, 2020

# Welcome to the Green Labs Community!

Dear Your Lab,

Thank you for taking the My Green Lab Green Lab Certification Assessment. We are very pleased to welcome you into the community of scientists and laboratory professionals that are actively working to reduce the environmental impact of their laboratory work. We look forward to supporting you on this journey as you explore what you can do to advance sustainability in your lab.

Thank you for taking the My Green Lab Green Lab Certification Assessment. We are very pleased to welcome you into the community of scientists and laboratory professionals that are actively working to reduce the environmental impact of their laboratory work. We look forward to supporting you on this journey as you explore what you can do to advance sustainability in your lab.

## About This Report

When your lab took our Green Lab Assessment, we asked you about your sustainability practices in up to 14 different topics depending on what kind of equipment you have and what kind of work you do in the lab. Broadly speaking we asked you questions that indicate what you are doing to minimize energy and water usage, and waste generation. On each question, we used the individual answers from the lab to create an overall score for that question that reflects the extent to which a green labs best practice has been adopted. The more people that answer that an activity is always done, the higher the score will be.

The scores for individual questions are combined to create a score for each of the 14 topics, which we will call sections in this report. The section scores are then combined to give you an overall score for the lab. If the lab did not answer the questions in a section, the score for that section will appear as zero, and was not counted as part of your overall score.

Any answers of “not applicable” were also not considered in the score. This means that if all lab members selected “not applicable” for a given question, then that question was not considered in the score for that category and the score for that question will appear as zero. If, however, some lab members answered, “not applicable” and some answered “never” the score for that question will reflect the “never” answers.

All that said, it is important to note that there are no right or wrong answers. The most important thing is that you answered honestly. Each lab will have different opportunities, different priorities, and even different approaches to laboratory sustainability. **What we aim to do is help you think about some best practices that you could adopt and give you a starting point for making change.**

In the pages that follow you will find the results for your lab. We start with an overview of your scores – looking at how you scored overall in this assessment and in each of the 14 possible sections.

Next, we look at each individual section and see where you are already doing a great job, and where you have opportunity for improvement. As we review each section, we will start with an overview of how your lab scored on the questions in that section. Then we will look at each question in detail. Here, you will find the question text, the lab's score on this question and our feedback and recommendations based on the lab's responses. Remember, the more people who reported that the activity was always done, the higher the score will be. If you want to make improvements in any of these activities, you can use our recommendations as a starting point. Keep in mind you may have other ideas and you should try those out too!

## What to do Next

We recommend that you use this report to have a group discussion with your lab on the different topic areas covered in the assessment. First look at the questions where you scored highest. Talk about the sustainable actions that you are already doing and make sure that everyone in the lab is aware of the best practice. We recommend taking a moment to congratulate yourselves on the effort and progress you have made already towards minimizing the environmental impact of the lab.

Next, look at the questions where you didn't score as well. Make sure you discuss why the lab didn't score well here and what you can do to change that. Sometimes the reason might not be what you would think. For example, one lab we worked with wasn't turning off the lights off in their support rooms. During the discussion it became clear that the reason the lights were left on was because people simply didn't know where the light switch was. They took a tour into the support room, identified the switch and posted a sticker near the door to remind people to turn off the light. The answers can be simple, but it's important to hear from everyone in the lab about what is going on and why.

This process of asking why or why not (as the case may be) is foundational to building a culture of sustainability in your lab. We believe that by questioning the norms and routines that so many of us adopt in our personal lives and in our science, we can open our minds to new ways of thinking about and conducting our work – finding more sustainable ways of achieving the same results. As you go through this report, keep an open mind to the recommendations and consider the input of your colleagues as you explore the options. Not every recommendation will be right for your lab. For example, you may find that after discussing incubators, you are not able to turn them off. That is fine. The important thing is that you talked about it, considered the possibility and made the decision based on data or the lab's need rather than leaving them on simple because they have always been left on.

For each question, we have tried to give you information or steps to consider what will help you make improvements in this area. Keep in mind that these are only recommendations. If you have another solution that fits better with your organization and with your lab, go with that. We also encourage you to share your solutions with colleagues in other labs and with us – we collect and share these different approaches so more and more labs can find solutions that work for them.

You will find that there are many recommendations that you can act on yourselves as members of the lab. However, there will be some that are outside of your control. If you have a green labs team at your organization, we would recommend first reaching out to them to see what kind of support they can offer. If you don't, reach out to the right department or group and see how you could work together to make the recommended improvements. In some cases, you may find that your organization has already done what you want to do. Or they might not be able to take on a particular project at present. Be patient and keep working with your lab mates, other labs, and other departments and you will get there.

If you need additional support or have questions that you need answered, please consider My Green Lab as a resource. We have a lot of information on our website [mygreenlab.org](http://mygreenlab.org) and you can always email us at [info@mygreenlab.org](mailto:info@mygreenlab.org). If we don't have the answer, we will try to connect you with another member of the Green Labs Community who can help.

Again, welcome to the community and high-five for taking this step towards building a culture of sustainability in your lab.

Best Regards,

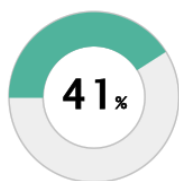


The My Green Lab Team

# Score Summary

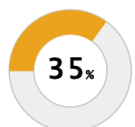
In this assessment Your Lab was scored based on 6 complete responses from the 8 people in the lab. In general, we look for at least 50% of a laboratory to take the assessment to best gauge the extent to which green lab best practices have been adopted. Fewer than that and we don't feel we get a representative view of what is being done in the lab.

Based on each person's individual responses, the paradise! Lab's overall score for the assessment is

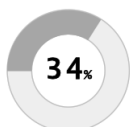


Assessment

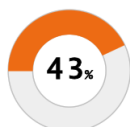
As you can see in the more detailed look at the scores from each section, there are areas where the lab is doing well and areas where you could make improvements. Any section where the score is zero indicates that the section did not apply to the lab. Next let's take a more detailed look at each of the sections to see what the lab is doing in each of these areas.



Infrastructure Energy



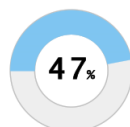
Plug Load



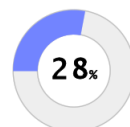
Large Equipment



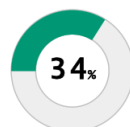
Fume Hoods



Cold Storage



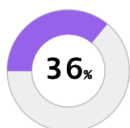
Water



Green Chemistry



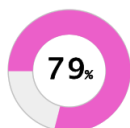
Recycling and Waste Reduction



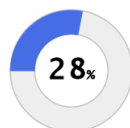
Purchasing



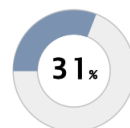
Resource Management



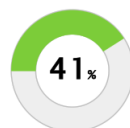
Field Work



Vivaria



Travel



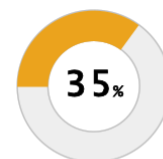
Community

# Infrastructure Energy



In this section we asked you questions about what you do to use the lights less and what your organization has done to optimize the ventilation and temperature in the lab.

Within a typical laboratory, at least half of the energy consumption is related to the air handling system needed to maintain air quality in the lab and keep the temperature at the appropriate level. Another nearly 15% of the energy consumed in the lab is related to the lighting. Although, as laboratory workers, you may not be in control of all these elements, you do influence them. The hazards you use in the lab dictate, in part, the ventilation requirements. Lighting and ventilation are such a large part of the energy consumption of the lab that we feel it is important to understand not only what the lab is doing to turn off the lights, but what your organization is doing to use these resources efficiently. Our hope is that by being aware of what can be done, you will advocate for improvements that can be made at your organization.



Infrastructure Energy

As an overview, this is how your lab scored on the questions in this section:

| Question   | Score |
|--|-------|
| 1. We turn off the lights when the lab is not in use   | 55%   |
| 2. We ensure lights are turned off in support rooms that are used infrequently.                  | 85%   |
| 3. We turn off overhead lighting when ambient light is sufficient.                               | 1%    |
| 4. For overhead lights, we have switched to LED or other solid-state lighting in the lab spaces. | 5%    |
| 8. Thermostats are not blocked by equipment, lab coats, or other materials.                      | 23%   |

Now let's take a look at the individual questions and our recommendations. These first few questions focused on lighting and making sure that you are turning off the lights when you can.

**Q1. We turn off the lights when the lab is not in use. Select "This does not apply to the lab" if you have occupancy sensors on the lights set to turn off automatically when the lab is empty.**

Your score on this question is 55%.

**Q2. We ensure lights are turned off in support rooms that are used infrequently (like cold, storage, or support rooms). Select "This does not apply to the lab" if you have occupancy sensors that turn the lights off automatically when the rooms are empty.**

Your score on this question is 85%.

Great work here. You should have a group discussion about why the lights are left on in the lab sometimes. Could you post signs, stickers or install occupancy sensors to make sure the lights get turned off? If you see someone leave the lights on, give them a friendly reminder that it's important to turn off the lights.

**Q3. We turn off overhead lighting when ambient light is sufficient. If you have light sensors or ambient light is never sufficient, please select "This does not apply to the lab".**

Your score on this question is 1%.

You should have a group discussion about turning the lights off when daylight is adequate. Could you post signs, stickers or install light sensors to make sure the lights get turned off when there is sufficient ambient light? Or could you install task lighting in areas that need extra lighting and turn off overhead lights?

**Q4. For overhead lights, we have switched to LED or other solid-state lighting in the lab spaces.**

Your score on this question is 5%.

Lighting accounts for nearly 15% off the energy used in a lab. LED lights can save 25-35% over CFL lights. Work with your facilities or operations group to investigate to see if you have already or could upgrade the lighting to LED. If you are feeling ambitious, check your house - are you use LEDs at home?

These last few questions focused on the temperature in the lab. You will likely have to work with your maintenance or engineering team to evaluate which options are possible and what can be done here as well.

**Q8. Thermostats are not blocked by equipment, lab coats, or other materials.**

Your score on this question is 23%.

You've made a start on this. When thermostats are blocked they cannot sense the room temperature accurately and the air handling system may not be performing optimally. Even if they are not covered, if they are right next to equipment that exhausts heat, they cannot accurately detect room temperature. Walk through the lab and identify thermostats that may be blocked or are next to equipment. If they are blocked or next to a heat source, work with the lab or with safety or other group to move the equipment or materials that are blocking.

Any comments from your colleagues are below. Make sure you discuss these as a team.

#### Comments

I think we need to put up signs to remind people to turn off the lights



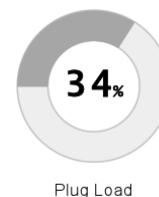
# Plug Load

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In this section we asked you questions about how you manage the energy consumption of equipment in the lab.

Plug load accounts for around 22% of the energy used in a lab – that's 22% that is largely within your control. Of course not every piece of equipment can be turned off all the time, but you can definitely take steps to minimize the amount of energy you are using by making sure you take advantage of energy saving modes and turn off or unplug equipment when possible.



Plug Load

As an overview, this is how your lab scored on the questions in this section:

| Question  | Score |
|---|-------|
| 1. We have had a group discussion about which pieces of equipment must be left on all the time and which may be turned off. | 100%  |
| 2. We turn off or unplug equipment when it is not in use or use outlet timers to turn off equipment automatically.          | 85%   |
| 3. We have checked for and utilize energy saving modes (standby or sleep modes) on our equipment.                           | 1%    |

Now let's take a more detailed look at those questions and what you can do to make improvements.

Now let's take a look at the individual questions and our recommendations.

**Q1. We have had a group discussion about which pieces of equipment must be left on all the time and which may be turned off.**

Your score on this question is 100%.

Outstanding. This is the first step to managing your plug load - agreeing on what you can and cannot turn off.

**Q2. We turn off or unplug equipment when it is not in use or use outlet timers to turn off equipment automatically.**

Your score on this question is 36%.

At least you are turning your equipment off some of the time! Plug load accounts for about 22% of the energy used in the lab. Ensuring equipment is turned off when not in use is critical to minimizing your plug load. You can utilize outlet timers to turn off equipment automatically or you can post reminders or shutdown procedures next to equipment. Turning off equipment can have a big impact. One lab we worked with installed outlet timers on their water baths and reduced energy consumption on that equipment by 52%.

**Q3. We have checked for and utilize energy saving modes (standby or sleep modes) on our equipment.**

Your score on this question is 40%.

Good. Make sure you are taking advantage of energy saving modes. Talk with the lab about what energy saving modes you are not using and what you could do to use them more.

Any comments from your colleagues are below. Make sure you discuss these as a team.

**Comments**

Most of our equipment can't be turned off.

I think we could safely turn off more of our equipment.

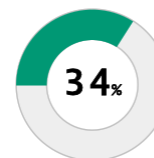
# Green Chemistry

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In this section we asked you questions about how your lab has integrated the 12 Principles of Green Chemistry into your laboratory operations.

First developed by John Warner and Paul Anastas, the 12 Principles of Green Chemistry are a series of guidelines or strategies to reducing the environmental impact of science. Though many of the principles are most readily applied towards chemistry and synthetic methods, the principles can apply to other disciplines including biology and related sciences. We hope that you keep an open mind as you consider how these ideas apply to the work that you are doing.



Green Chemistry

As an overview, this is how your lab scored on the questions in this section:

| Question  | Score |
|---|-------|
| 1. We have had a group discussion about the 12 Principles of Green Chemistry and how they apply to our work.  | 5%    |
| 3. We use greener alternative tools or a solvent selection guide (substitution or avoidance) to identify greener chemicals.                         | 85%   |
| 8. We utilize solvent-free chemistries or separations (e.g. solid-state synthesis or super critical CO <sub>2</sub> ).                              | 60%   |
| 9. We have looked for methods that can be conducted at ambient temperatures and pressures (e.g. reactions that do not need to be heated or cooled). | 0%    |
| 12. We use alternatives to radioisotopes for labeling.  | 100%  |

Now let's take a look at the individual questions and our recommendations.

**Q1. We have had a group discussion about the 12 Principles of Green Chemistry and how they apply to our work.**

Your score on this question is 5%.

The 12 principles don't just apply to chemistry - they can apply to biology and related sciences too. Keeping an open dialog in the lab about this invites fresh thinking about how to minimize hazards and waste in your research. Make sure your lab revisits this conversation from time to time so that new lab members can be part of the discussion.

**Q3. We use greener alternative tools or a solvent selection guide (substitution or avoidance) to identify greener chemicals.**

Your score on this question is 60%.

It's great that you are using these tools! Many solvent selection tools are available from various companies and organizations. The ACS has a new interactive tool (<https://www.acs.org/content/acs/en/greenchemistry/research-innovation/tools-for-green-chemistry/solvent-selection-tool.html>), Sigma's DOZN tool (<https://www.sigmaaldrich.com/chemistry/greener-alternatives/matrix-scoring.html>) offers whole experiment planning and analysis, and this article offers an interesting analysis and summary of several of the different tools. (<https://pubs.rsc.org/en/content/getauthorversionpdf/C4GC01149J>).

**Q9. We utilize solvent-free chemistries or separations (e.g. solid-state synthesis or super critical CO<sub>2</sub>).**

Your score on this question is 0%.

The lab reports that this does not apply to the lab. This question has not been counted as part of your assessment. Make sure to keep looking at options - research into new possibilities is ongoing.

**Q10. We have looked for methods that can be conducted at ambient temperatures and pressures e.g. reactions that do not need to be heated or cooled).**

Your score on this question is 70%.

You are making great progress! Energy is an often overlooked waste stream since you can't see it. Using methods that don't require heating, cooling or non-ambient pressures use less energy and reduce risk of accidents related failure of the apparatus. Talk with the group and what you could do to reduce non-ambient conditions.

**Q12. We use alternatives to radioisotopes for labeling.**

Your score on this question is 100%.

Outstanding! Radioactivity in the lab not only is hazardous, it requires additional safety controls, training and permitting.

Any comments from your colleagues are below. Make sure you discuss these as a team.

**Comments**

I always use 2-Me-THF instead of THF, but I don't know if everyone does this

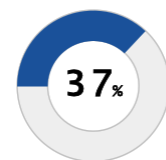
# Recycling and Waste Reduction

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In this section we asked you questions about what your lab is doing to reduce waste and recycle materials.

Although recycling capabilities and policies vary widely from region to region and even organization to organization, there are some general steps that your lab should be taking to make sure you are properly sorting your waste and disposing of it in the proper channel. There are also take-back and recycling programs that you may be able to participate in to help divert waste from landfill or incineration.



Recycling and Waste Reduction

As an overview, this is how your lab scored on the questions in this section:

| Question   | Score |
|--|-------|
| 1. We have recycling bins for laboratory materials                                       | 51%   |
| 2. We know what materials can be recycled in the lab and how to sort them properly.      | 50%   |
| 5. We preferentially select suppliers who offer product and packaging take-back schemes. | 1%    |
| 6. We recycle gloves when feasible.  | 3%    |

Now let's take a look at the individual questions and our recommendations. First of all, let's see if you have recycling bins in the lab and you know how to use them.

**Q1. We have recycling bins for laboratory materials.**

Your score on this question is 51%.

It's great that you have bins for recycling in the lab. Make sure that everyone is aware of where they are in the lab.

**Q2. We know what materials can be recycled in the lab and how to sort them properly.**

Your score on this question is 50%.

Some of the lab reports that it is clear what they can recycle in the lab. It is very important that you recycle correctly and only recycle materials that your recycling vendor can take. If you have questions about specific products or materials, make sure you talk to your SHE/facilities/waste management or other appropriate group to determine if your recycler can take those items. Consider making signage for the bins with images of items specific to the lab that can be recycled.

**Q5. We preferentially select suppliers who offer product and packaging take-back schemes.**

Your score on this question is 1%.

Ask your colleagues if this has ever been discussed in the lab. If not, talk with your suppliers to see what programs they have that you could take advantage of. If you find a comparable product to one you have today but from a supplier that offers a take-back program, consider switching. Preferentially selecting suppliers that offer take-back programs for products and packaging lets them know that they are offering something that is of value for you. It also encourages suppliers that don't have programs today to invest in developing new take-back options. Make sure you continue to ask your suppliers about what kinds of take-back programs they are offering in your area.

**Q6. We recycle gloves when feasible.**

Your score on this question is 3%.

Gloves are often one of the main waste streams in a lab! Evaluate whether there are changes that you could make to eliminate certain hazards that make gloves not possible to recycle or move hazardous work to a specific area in the lab that makes it possible to recycle gloves elsewhere. We are aware of programs from Kimberley Clark, TerraCycle and Medline and you can contact them for more information.

Any comments from your colleagues are below. Make sure you discuss these as a team.

**Comments**

Internal regulations often prohibit donating lab equipment. When it has been done it has been done without following the proper channels.

## Thank You

Congratulations on completing your green lab assessment! We are excited to be working with you and helping you find solutions to reduce the impact of your laboratory operations.

If you need additional support or have questions, please visit the My Green Lab website at [mygreenlab.org](http://mygreenlab.org) or you can email us at [info@mygreenlab.org](mailto:info@mygreenlab.org).

Thank you for becoming part of the Green Labs Community!

Best Regards,



The My Green Lab Team