

### LEAF - Silver Criteria

Category	Criteria	Target Outcome	Criteria not met
<b>Waste</b>	The lab has assessed its use of consumables and implemented realistic measures to reduce use. These efforts should target single-use plastics where feasible and best practice for when this has been achieved is shared amongst lab users. Where changes impact on standard protocols, this has been captured as part of the documenting procedure.	<ul style="list-style-type: none"> <li>Usage of consumables has been assessed for feasible means to reduce.</li> </ul>	<ul style="list-style-type: none"> <li>No assessment for usage of single-use plastics has been conducted, and there are clear opportunities for reduction which have not been enacted.</li> </ul>
		<ul style="list-style-type: none"> <li>Change in practice has resulted in a reduction of single use plastic, which may be quantified in some manner.</li> </ul>	
		<ul style="list-style-type: none"> <li>Updated local protocols are available</li> </ul>	
<b>Waste</b>	There is minimal contamination of recycling in clinical waste bins and lab members are aware of best practice. Labs have clear processes in place to ensure waste is correctly segregated to minimise the impact of cross contamination of waste streams. These processes must cover what to do if waste is disposed of incorrectly.	<ul style="list-style-type: none"> <li>Correct disposal procedures are well communicated through documentation and training for all waste streams.</li> </ul>	<ul style="list-style-type: none"> <li>Waste bins do not have clear signage and/or upon inspection, there is obvious mixing in recycling or general waste bins.</li> </ul>
		<ul style="list-style-type: none"> <li>Clear signage on bins, and audit confirms minimal mixing of waste streams is occurring.</li> </ul>	<ul style="list-style-type: none"> <li>Training is not provided to lab members.</li> </ul>
<b>People</b>	The lab has communicated with other groups/labs/departments about sustainable practices, and/or has taken part in a sustainability audit.	<ul style="list-style-type: none"> <li>Communication, collaboration and knowledge exchange has led to either increased participation in sustainability activities/awards, or lab members have assisted auditing others for sustainable practices.</li> </ul>	<ul style="list-style-type: none"> <li>Communication surrounding sustainability or an audit of another lab engaged in sustainable practices has not taken place, nor are any imminently planned.</li> </ul>

<b>Purchasing</b>	The lab is aware and makes use of schemes offered by suppliers/manufacturers which increase reuse, recycling, and waste reduction. This includes, but is not limited to, tip box recycling and the return of polystyrene boxes and Winchesters to suppliers. Instructions for lab users on which schemes are in use, how to engage with them and regular reminders to prevent inadvertent disposal of items are provided to all lab users.	<ul style="list-style-type: none"> <li>Relevant schemes (tip-boxes, Winchester bottles, package returns) have been considered and implemented wherever feasible.</li> </ul>	<ul style="list-style-type: none"> <li>Relevant schemes have not been considered, nor any implemented despite their possible feasibility.</li> </ul>
		<ul style="list-style-type: none"> <li>Lab members are able to provide details of the schemes in use in their space.</li> </ul>	
<b>Equipment</b>	Freezers, fridges, and LN2 dewars are maintained or there is a plan in place going forward to achieve this. This includes defrosting, removing unwanted samples, checking seals, and cleaning filters on ULT freezers.	<ul style="list-style-type: none"> <li>Cold storage equipment is well maintained; with no more than 10% of units having either excessive frost, blocked filters, or bad seals.</li> </ul>	<ul style="list-style-type: none"> <li>Upon inspection of at least 10% of cold storage devices there is significant build-up of ice and/or dust build up on filters.</li> </ul>
			<ul style="list-style-type: none"> <li>Routine maintenance has not been planned.</li> </ul>
<b>Equipment</b>	Washers, autoclaves, and any equipment which permits batching, are only run when full. The lab considers appropriate sizing when buying such equipment. The procedure should be communicated to all lab users.	<ul style="list-style-type: none"> <li>There is an organised approach to batching ensuring units are only run at full or near capacity e.g. dishwashers aren't empty when operated.</li> </ul>	<ul style="list-style-type: none"> <li>Equipment such as glass washers and autoclaves are in operation at less than 70% capacity, unless absolutely necessary for operations.</li> </ul>
		<ul style="list-style-type: none"> <li>For any units purchased in the past 12 months assessments have determined the appropriate size of units in line with batching procedures.</li> </ul>	<ul style="list-style-type: none"> <li>Batching is not facilitated by any means, and if it does it is accidental.</li> </ul>
		<ul style="list-style-type: none"> <li>If asked lab users will be able to provide details of how/when relevant equipment is run.</li> </ul>	

<b>Equipment</b>	There is a system in place permitting the booking and sharing of communal equipment. Details of the equipment covered by this process should be communicated to all lab users and would likely benefit from being documented for easy reference.	<ul style="list-style-type: none"> <li>Items of communal equipment are shared via a booking system which is communicated to users who can provide details of the process</li> </ul>	<ul style="list-style-type: none"> <li>There is no system in place although there is clear potential for such a system.</li> </ul>
<b>Equipment</b>	A review of the lab's equipment has been undertaken to determine opportunities for changing the way it is operated to improve energy efficiency and reduce carbon e.g. evening, weekend, holiday switch-offs. For freezers and fridges, where feasible, their temperatures have been raised and drying cabinets/ovens have had temperatures lowered. For incubators, compartmentalised models are used where possible.	<ul style="list-style-type: none"> <li>Temperature regulating equipment has been assessed and changes in temperature have been implemented wherever feasible.</li> <li>Freezers should not be colder than 20°C unless necessary, and ULT freezers should not be colder than 80°C, but ideally set at -75°C/-70°C.</li> <li>ULT freezers at -80°C are acceptable where research methods take priority.</li> <li>Evidence is available to show that the way equipment is operated has been reviewed e.g. through records or use of switch off stickers</li> </ul>	<ul style="list-style-type: none"> <li>The feasibility of altering temperature set points for cold storage devices and ovens have not been investigated.</li> <li>Incubators purchased during LEAF submission period are not compartmentalised and evidence of why these models were not chosen cannot be provided</li> </ul>
<b>IT</b>	There is a local or institutional system in place to ensure critical data is backed up. This also ensures large files are not excessively stored and deleted where feasible. Whilst it is critical to back-up data it is also very important to delete unwanted files and regularly review files in cloud storage. Information on the systems available within your organisation to support this activity are provided to all users.	<ul style="list-style-type: none"> <li>There are systems or plans in place to ensure all critical data is retained and backed-up and non-critical data is not backed up unnecessarily. E.g. through the cloud.</li> </ul>	<ul style="list-style-type: none"> <li>There is no back up system in place.</li> <li>Duplicate data sets exist and staff are not aware of the carbon implications of data storage</li> </ul>

<b>Sample &amp; Chemical Management</b>	<p>Procedures for equipment breakdown are in place and well communicated to minimise losses. This may include but is not limited to freezer alarms, back-up storage spaces identified, call-out procedures, etc.</p> <p>Service contracts are in place where possible and details of maintenance schedules along with information on breakdown reporting procedures are shared with lab users.</p>	<ul style="list-style-type: none"> <li>Equipment breakdown will not result in the loss of valuable items due to monitoring alarms and contingency planning.</li> </ul>	<ul style="list-style-type: none"> <li>No procedures for identifying and/or reacting to equipment breakdowns and/or users are not aware of any procedure.</li> </ul>
		<ul style="list-style-type: none"> <li>Maintenance schedules or reporting processes are available upon request</li> </ul>	
		<ul style="list-style-type: none"> <li>Users are aware of the procedures to follow in the event of a breakdown.</li> </ul>	
<b>Sample &amp; Chemical Management</b>	<p>The 12 Principles of Green Chemistry have been considered for current lab members, and communicated to the new members when they start.</p>	<ul style="list-style-type: none"> <li>Discussion, resources and/or training which support the 12 Principles of Green Chemistry have led to opportunities for more green alternatives to harmful chemicals.</li> </ul>	<ul style="list-style-type: none"> <li>Users are not aware of the 12 Principles of Green Chemistry and/or considerations of the principles has not taken place.</li> </ul>
		<ul style="list-style-type: none"> <li>Labs should show an awareness of why they are unable to replace harmful chemicals in use with less harmful alternatives.</li> </ul>	
<b>Research Quality</b>	<p>The lab is aware of any relevant local core and shared facilities or equivalents. Either there is a valid rationale for not utilising such a facility (which has documented, with senior level approval), or the lab makes regular use of them. Any institutional policies relating to shared facility use will be communicated to lab users and adopted as appropriate. Reasons for not using shared facilities shall be re-evaluated periodically to ensure validity of approach.</p>	<ul style="list-style-type: none"> <li>Local core facilities (e.g. mass spectroscopy) are fully utilized wherever relevant and feasible, and their availability is communicated.</li> </ul>	<ul style="list-style-type: none"> <li>Users are not aware of local core facilities and/or the lab has not investigated using them.</li> </ul>
		<ul style="list-style-type: none"> <li>Request users to display an understanding of available core facility resources (potentially external).</li> </ul>	<ul style="list-style-type: none"> <li>Where a decision to not use a facility has been made, no schedule for the review of the decision is in place.</li> </ul>

<b>Research Quality</b>	The lab has a forum for sharing and discussing negative results or discussing how experimental procedures could be optimised.	<ul style="list-style-type: none"> <li>Lab members have a means to regularly communicate negative results, at minimum with other lab members. Simply having regular lab meetings is not sufficient, lab members must feel encouraged to share negative results in some fashion.</li> </ul>	<ul style="list-style-type: none"> <li>Negative results are not recorded or shared in a way that allows colleagues to learn from previous errors and avoid experimental repeats.</li> </ul>
<b>Ventilation</b>	Fume cupboards and Local Exhaust Ventilation equipment is not used for extended storage, and nothing impedes internal airflow. The procedure for how to run this equipment has been communicated to all lab users and may benefit from being documented for easy reference.	<ul style="list-style-type: none"> <li>Items in fume cupboards and LEV equipment are kept to a minimum resulting in improved safety and reduced energy consumption.</li> <li>Evidence can be provided that users have been made aware of how to use these types of equipment</li> </ul>	<ul style="list-style-type: none"> <li>Fume cupboards or LEV equipment they contain items which are being stored or are not in active use over the coming days.</li> </ul>
<b>Ventilation</b>	Users have been trained on when to lower fume cupboards sashes, and/or turn safety cabinets off. Where good practice is not regularly followed there is a system in place to improve this.	<ul style="list-style-type: none"> <li>Clear signage is present.</li> </ul>	<ul style="list-style-type: none"> <li>10%+ of sashes of fume cupboards not in use are raised, and/or fume cupboards are not left in high-flow mode unnecessarily.</li> </ul>
		<ul style="list-style-type: none"> <li>Training and/or guidance on the benefits of sash lowering and turning off safety cabinets is provided to users.</li> </ul>	<ul style="list-style-type: none"> <li>&lt;25% of safety cabinets are on with no active use.</li> </ul>
<b>Water</b>	Sustainable water use is communicated to all lab users. This includes specifying what levels of water purity are necessary for various applications and	<ul style="list-style-type: none"> <li>Lab users can demonstrate an understanding of the differences between water types.</li> </ul>	<ul style="list-style-type: none"> <li>User demonstrates no understanding for the different water types.</li> </ul>

	why, along with ways to avoid taps running (e.g. soaking glassware)	<ul style="list-style-type: none"> <li>• Best practice is included in the induction for new lab members.</li> </ul>	<ul style="list-style-type: none"> <li>• No effort has been made to communicate best practice to new members.</li> </ul>
		<ul style="list-style-type: none"> <li>• Any repeated issues with incorrect usage have been flagged at meetings.</li> </ul>	
<b>Teaching</b>	An awareness of resource use and associated environmental impacts is incorporated into practical laboratory learning and teaching.	<ul style="list-style-type: none"> <li>• There are viewable lesson plans that integrate best sustainable practices, such as instructions on which waste streams to use.</li> </ul>	<ul style="list-style-type: none"> <li>• No effort has been made to integrate sustainability into any lesson plans or teaching sessions.</li> </ul>
		<ul style="list-style-type: none"> <li>• Sustainability is a key aspect of the induction for students.</li> </ul>	
		<ul style="list-style-type: none"> <li>• For Masters and PhD students, evidence that they are taught to consider the environmental impact of their work is available.</li> </ul>	