

Sustainable Laboratory Practice

Our first steps towards Green Lab certification

**Organisation Name: Molecular Medicine, Department of
Pathology, Royal Hobart Hospital, Tasmania**

Presenter: Melissa Yow
melissa.yow@ths.tas.gov.au

PPA National Forum, Innovations Plenary
Tasmania 2023

Context

Globally, healthcare systems contribute to 4.4% of greenhouse gas emissions annually.

In Australia, the healthcare system contributes to 7% of greenhouse gas emissions.

Pathology and diagnostic imaging contributes to 9% of the total carbon footprint of the whole of NSW healthcare system.

Tasmania has a legislated emissions target of net zero by 2030.

In 2014, it was estimated that globally, **laboratories produced ~ 5.5 million tonnes of plastic waste**, equivalent to the combined tonnage of 67 cruise liners (Urbina and Watts, 2015).



X 67

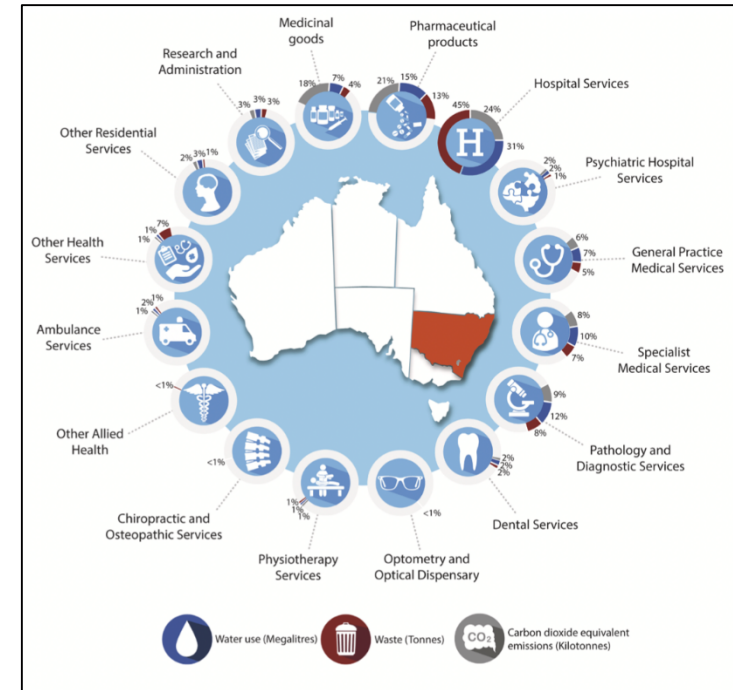


Image: Malik et al., 2021

Aim of this Innovation

Aim: To achieve My Green Lab® certification – a framework for evidence-based sustainable laboratory best practice

The problem: Laboratories are *resource-intensive* spaces that consume a lot of *electricity* and produce a lot of *waste*. Greenhouse gas emissions are fuelling climate change which contributes significantly to global ill-health.

Why are we undertaking this project? As scientists and healthcare workers, we must take responsibility to minimise the greenhouse gas emissions that are contributing to anthropogenic climate change. We recognise that we have to take steps to reduce the carbon footprint of the laboratory and adopt more sustainable practices to meet this objective.

Improvements sought

Rethink the way we do things

Reduce waste and electricity use (lighting, equipment)

Recycle more of our waste stream

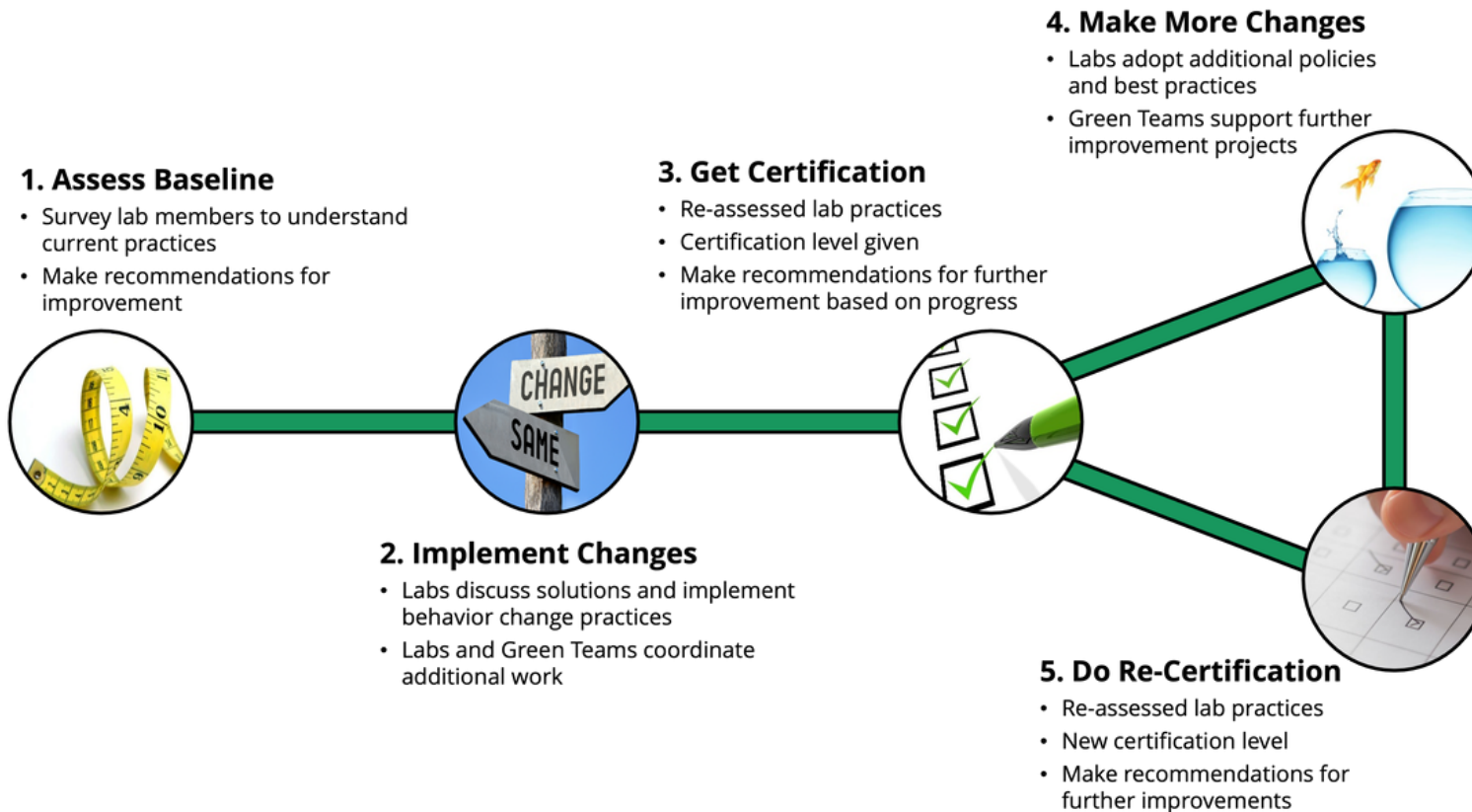
Divert non-biohazardous waste from clinical waste disposal into other waste streams

Purchase better - more sustainable products, less packaging, fewer consumables

Build a culture of sustainability and continuous improvement

Save resources = save money

My Green Lab[®] Certification Process



Key Changes to be Implemented

Managing Waste and Recycling

- Decontamination of rigid plastic waste so it can be safely recycled rather than being disposed of as clinical waste (infectious as well as amplicon contamination issues)
- Dedicated cardboard, plastic, polystyrene, battery, pen recycling
- Food and organic waste
- Buying better – purchasing more environmentally sustainable products where possible (less packaging, less plastic)

Reducing plug load

- Turning off instruments overnight or when not in use (where practical)
- Turning off biological safety cabinets, heat blocks, incubators when not in use (where practical)
- Adjusting the set points of ultra-low freezers to -70°C instead of -80°C
- Conduct periodic freezer maintenance by checking door seals, cleaning/replacing filters, defrosting units and cleaning condenser coils.

Outcomes so Far

Recycling rigid plastic waste from amplification room (August 2023)

- Diverting ~10kg of plastic waste from clinical waste disposal per month, approximately 120kg per year

Reducing energy use

- Turning off biological safety cabinets, computers, incubators, heat blocks and large equipment at the end of each day

Cost savings

Staff engagement and starting a conversation around environmental sustainability in the lab

Sustainable Laboratory Practice

Molecular Medicine, Pathology, Royal Hobart Hospital

Problem: Laboratories are *resource-intensive* spaces that consume a lot of *electricity* and produce a lot of *waste*. Greenhouse gas emissions are fuelling climate change which contributes significantly to global ill-health.

Solution: Engage with the My Green Lab® certification process which provides a framework for evidence-based sustainable laboratory best practice.

Results: Diverting and recycling 10kg/month rigid plastic waste from clinical waste, reducing energy use by switching off instruments, computers, heat blocks and incubators at the end of the day, engaging staff in sustainable laboratory practice.