

# Introducing the 6Rs

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# A Concept to Sustainable Practices

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## *Why talking about concepts?*

A concept guides you on your journey. It can help you to discover new options where to apply sustainability. It will allow you to understand what your actions should achieve. It will orientate your purpose, making you more efficiently craft strategies and arriving at actionable steps.





## *Before we start*

The 6Rs emerge as a framework that encourages to re-consider our work patterns and embrace responsibility.

They enable us to view our daily research through a new perspective in order to see the potential for change. The order grew historically but we will reorder them into a functional structure

# A new Organization

## Principle

### Reduce

Retain what is operational to achieve a triumphant experimental result, rather than giving precedence to factors like ease.

## Strategy

### Reject

A cognitive approach to evade the usual, advantageous, or direct or straightforward

### Rethink

The process of adopting a fresh standpoint to discover substitute resolutions and novel ideas.

## Actions

### Recycle

Comprehending composition to facilitate a subsequent use downstream.

### Reuse

Preventing the usage of items just once when pollution is not an issue.

### Repair

Fixing but also maintenance and understanding of machines & software.



## Reduce

Reduction claims the throne.

Reducing is the final goal of sustainable action, and basically the other 5Rs point towards this principle. Reducing, focuses on minimizing the use of resources and materials but also the number of blunders, exhaustion and expenses. In essence, reduce is the guiding principle that should replace convenience or habit.



# *Examples*



## Reduce

Reduce the amount of single-use plastic tubes by using glassware instead or reusing. Optimize the quantity of chemicals and reagents, ensuring they are only used in the necessary amounts. Minimize the use of paper by using digital media. Reduce the number of animals by improving experimental design. Reduce expenses and time for sticking tips by wasting less.



## *Reject*

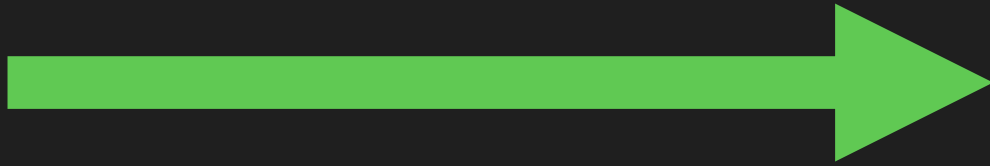
The principle of rejection focuses on not going with the convenient, with what is common or comforting. Thereby, it initiates Rethinking to find new solutions & innovations Refusing builds on convictions. Given its symbolic nature, it is a great inspiration for others as well.



## Reject

For example: Refuse to simply agree to the „running system“. It is more convenient to do so but this is not your driving principle. Refuse to give up. Whether you are crafting a new way of doing things or searching for innovative approaches. No change will take place unless you reject to use the single use plastics to streak out your bacterial cultures.

# *Examples*





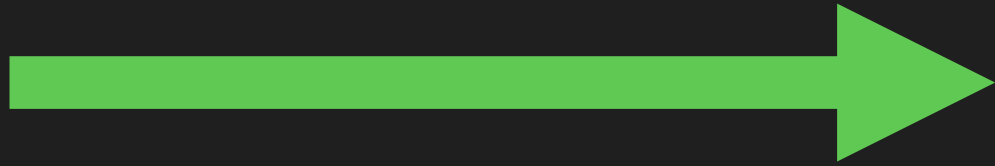
## Rethink

The principle of rethink encourages to critically evaluate practices and explore alternative approaches. It involves questioning existing systems and finding innovative solutions to environmental challenges. That means to take a new angle and reconsider your protocols. This is your chance to be creative!



## Rethink

# *Examples*



Can you use old tip boxes as containers? How about using a PCR-tube instead of a normal one to save on plastic. Can you use a different solvent which is less toxic? How about setting up a collaboration in order to avoid the resource & time intensive trying-things-out? Basically, take a few seconds to rethink all the common practices.



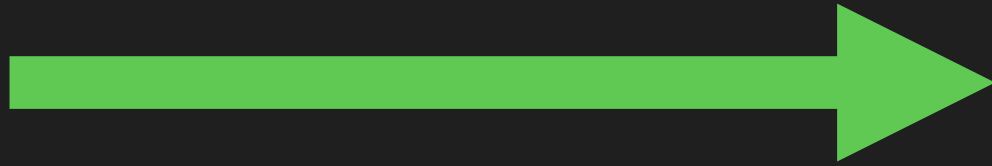
## Reuse

Reuse involves finding ways to reuse materials or products instead of disposing of them after a single use. This principle emphasizes the importance of designing research practices and conscious approach to see where contamination is possible and where not.



## Reuse

# *Examples*



For example: Consider whether you can reuse materials such as falcon tubes in case you prepare the same solution over and over. If you pipette solvents or you have multiple steps for a single sample, you might be able to keep the pipette tip since there is no contamination risk.



## Recycle

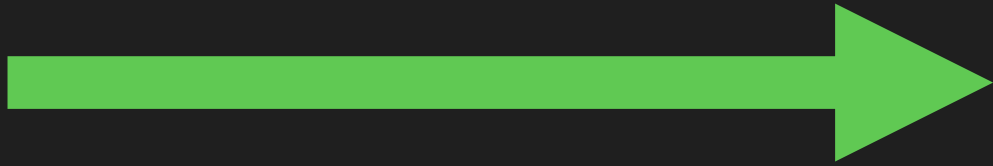
This principle emphasizes the importance of segregating and managing waste. Just because you throw something away, it is not gone. Recycling is an exciting scientific topic given the fascinating properties of polymers. Of note, recycling can be distinguished in upcycling, and primary, secondary, tertiary... recycling



## Recycle

Research laboratories can implement recycling programs for commonly generated waste materials such as paper, plastic, glass, and metal. Provide dedicated recycling bins and ensuring proper segregation by educating staff properly. And don't forget batteries and broken devices!

# *Examples*



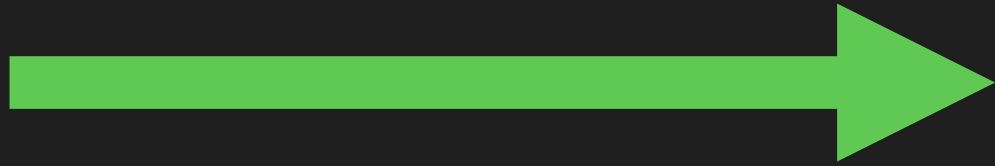
## Repair

The idea of repairing, promotes the restoration but also the maintenance of equipment and infrastructure to prolong its lifespan and reduce the need for replacement. Additionally, one can understand repair as a reminder to avoid failure by properly understanding hard- and software at first.



## Repair

# *Examples*



Instead of purchasing new laboratory equipment when it malfunctions, researchers can opt for repair services or ask their internal caretakers. Asking is for free and repairing is cheaper than buying newly. Also, take the time to see how your colleagues use software and settings – you might learn something new from it.





# ReAdvacce

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