Milli-Q®
Lab Water Solutions

MERCK

Working Against the Clock:
How to Achieve Environmental Sustainability in Life Science Laboratories

Every year, CO_2 emissions, electric power consumption, and freshwater usage are increasing causing considerable damage to the global environment. As a result, industries worldwide are working to develop more environmentally friendly processes and technologies. Some life science companies are working full steam ahead to make their own and their customers' laboratory processes more sustainable.

Laboratories use a lot of water and energy

~11 Litres of Water
For every gel run

~227 Litres of Water
Used by autoclaves per cycle

~115 kWh
Used by a fume hood per day

<15 kWh
Used by PCR machines per day

Key laboratory functions affecting the environment

- Running of cooling systems, autoclaves, sterilizers, fume hoods, etc.
- Need for sample storage at various temperatures
- Use of gloves, pipette tips, sample containers, etc.
- Waste disposal, e.g. chemicals, cells, solvents

Resulting in...

High levels of energy used

Large water consumption

Generation of plastic waste

Production of hazardous waste

How can laboratories reduce their environmental impact?

Focus on carbon offset projects

Implement waste management techniques

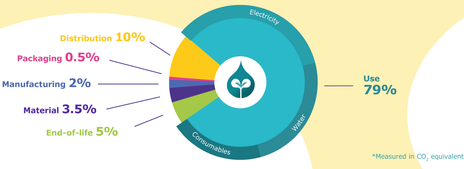
Introduce renewable energy sources

Move from paper-based to digital data management

Invest in more sustainable technologies

One area of laboratory practices that requires particular attention is the resource-intensive process of water purification.

Contribution to Global Warming Potential* by Life Cycle Stage



*Measured in CO_2 equivalents

By performing a life cycle assessment on its Elix® 100 water purification system to measure its environmental impact, the team developing Milli-Q® Lab Water Solutions discovered that **79% of the global warming potential of this system occurs during onsite usage.**

How do Milli-Q® Products and Services work towards greater sustainability?

To improve its environmental footprint, Merck is focusing on making its systems and processes more sustainable, particularly in the areas of electricity and water consumption.

Milli-Q® Lab Water Solutions contribute to sustainability with eco-friendly purification technologies & designs

Up to 50% water savings
with E.R.A® technology that optimizes water recovery & reduces water usage, saving ~1200L/day

Up to 30% energy savings
with Milli-Q® IX pure water systems vs. the previous generation of Elix® systems, saving >500 kWh over the product lifetime

0 Mercury
used in the ech$_2$o® UV lamps, minimizing mercury handling & enabling smaller-sized systems

0 Chemical Waste
with Elix® EDI technology, eliminating the need for hazardous chemicals

Reduced Plastic
More compact, lighter systems with 50% of plastic from suppliers audited by Together for Sustainability

Digital solutions can reduce your CO_2 footprint!

MyMilli-Q™

0 Paper, 0 Printing
Save 1 million sheets of paper & 6 tonnes of CO_2 annually!

Merck customers can effectively manage their water systems and accompanying data without ever having to print with the help of MyMilli-Q™ online solution or via system memory or a USB key.

With Milli-Q® Connect remote services, the support team can help with online diagnostics and trouble-shooting and even provide remote repairs, avoiding the need to wait for repair services to arrive.

With its life science business of over 300,000 products and 21,000 employees in over 60 countries, Merck understands the importance of managing the environmental impacts of its operations. By implementing a global environmental management system in its facilities, the company is working to achieve sustainability related to emissions, energy consumption, water usage, and waste generation.

> *"Streamlined operations means producing top-quality products in the most efficient way possible, with minimal use of energy, water, and waste. We are working towards a future in which the 'waste' of one process can be the raw material input for another process."*
>
> **- Christopher Famolare, EIT, CEM, CEA, Global Manager of Sustainable Operations, Merck, Darmstadt, Germany -**

PLATINUM Top 1% 2020 ecovadis CSR Rating

For its work in environmental sustainability, labor practices, and human rights, Merck, Darmstadt, Germany was awarded the Platinum status from EcoVadis in 2020, placing the company in the top 1% of all companies assessed.

Towards a Greener Lab: Milli-Q® Lab Water Solutions help make your every day a more sustainable day.

The life science business of Merck operates as MilliporeSigma in the U.S. and Canada.

SOURCES

- The World Bank:
  - Electric Power Consumption
  - Carbon Dioxide Emissions
  - Fresh Water Usage
- My Green Lab
- LC Santa Cruz, Sustainability Office
- Merck, KGaA, Darmstadt, Germany
- Global Data
- Pharmaceutical Engineering

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