

# THE SCIENCE BEHIND *green chemistry*

## THE SCIENCE BEHIND GREEN CHEMISTRY

You've most likely heard that it's important to "be Green," but what does that mean in the science lab? Green chemistry is the design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances. Everything we do in the Chemistry class and outside of the lab causes ripple effects in our environment.



# 12 PRINCIPLES OF GREEN CHEMISTRY

Learn the 12 principles of green chemistry that can make greener chemicals and processes. These principles explain the scope of green chemistry and educate us about the importance of green chemistry.

**You can check out all 12 of them here:**

<https://www.acs.org/content/acs/en/greenchemistry/principles/12-principles-of-green-chemistry.html>

<https://www.compoundchem.com/2015/09/24/green-chemistry/>

## HOW TO BE GREEN AT SCHOOL AND AT HOME!



At School



At Home



**Be Energy Efficient**

- When not in use, turn off and unplug equipment.
- When not in use, turn off lights and the fume hood.
- Install energy efficient heating, ventilation and air conditioning (HVAC) systems.

- Turn off lights when not in the room.
- Unplug electronic devices, when they are charged.
- Use a programmable thermostat to decrease energy use when no one is home.



**Prevent Waste**

- Perform microscale experiments.
- When possible, use glassware instead of disposable plasticware.
- Recycle damaged glassware—though borosilicate glass is not recyclable with standard glass.

- Use reusable water bottles, coffee cups and food containers.
- Always recycle paper, glass, metal and plastic.
- Recycle batteries from electronic devices.



**Safer Chemistry\***

- Create and maintain a culture of safety to prevent or reduce accidents.
- Review lab activities to identify risks and develop safety precautions.
- Ensure that Personal Protective Equipment (PPE) are used and safety procedures are followed.

- Change the batteries in smoke detectors.
- Check outlets so they are not overloaded or hot to touch.
- Install a carbon monoxide detector.
- Safely store items like knives or power tools or hand tools in safe cabinets.