

# Green Chemistry

## *Everyone's Doing It!*

### The 12 Principles of Green Chemistry

A framework for designing or improving materials, products, processes and systems.

1. Prevent Waste
2. Atom Economy
3. Less Hazardous Synthesis
4. Design Benign Chemicals
5. Benign Solvents & Auxiliaries
6. Design for Energy Efficiency
7. Use of Renewable Feedstocks
8. Reduce Derivatives
9. Catalysis (vs. Stoichiometric)
10. Design for Degradation
11. Real-Time Analysis for Pollution Prevention
12. Inherently Benign Chemistry for Accident Prevention

\*Anastas, P. T.; Warner, J. C. *Green Chemistry: Theory and Practice*, Oxford University Press: New York, 1998, p.30.  
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[www.acs.org/greenchemistry](http://www.acs.org/greenchemistry)

## A New Kind of Chemistry

Green Chemistry is based on a set of principles that when used in the design, development and implementation of chemical products and processes, enables scientists to protect and benefit the economy, people and the planet.

Green Chemistry uses renewable, biodegradable materials which do not persist in the environment.

Green Chemistry is using catalysis and biocatalysis to improve efficiency and conduct reactions at low or ambient temperatures.

Green Chemistry is a proven systems approach.

Green Chemistry reduces the use and generation of hazardous substances.

Green Chemistry offers a strategic path way to build a sustainable future.

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*To catalyze and enable the implementation of green chemistry and engineering throughout the global chemical enterprise*