

#Jenny



Finally I get this ebook, thanks for all these I can get now!

#Rio



Cool! I'am really happy

#Markus Jensen



I did not think that this would work, my best friend showed me this website, and it does! I get my most wanted eBook

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#Che Salsa



My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler



so many fake sites. this is the first one which worked! Many thanks

**The 12 Principles of GREEN CHEMISTRY**

Green chemistry is an approach to chemistry that aims to maximize efficiency and minimize hazardous effects on human health and the environment. While no reaction can be perfectly "green", the overall negative impact of chemistry research and the chemical industry can be reduced by implementing the 12 Principles of Green Chemistry whenever possible.

- 1. WASTE PREVENTION**  
Prioritize the prevention of waste, rather than cleaning up and treating waste after it has been created. Minimize or eliminate waste in every step.
- 2. ATOM ECONOMY**  
Reduce waste at the molecular level by minimizing the number of bonds from all reagents that are not incorporated into the final product. Use atom economy to evaluate reaction efficiency.
- 3. LESS HAZARDOUS CHEMICAL SYNTHESIS**  
Design chemical reactions and synthetic routes to be as safe as possible. Consider the hazards of all substances handled during the reaction, including waste.
- 4. DESIGNING SAFER CHEMICALS**  
Minimize toxicity directly by molecular design. Predict and evaluate aspects such as physical properties, toxicity, and environmental fate throughout the design process.
- 5. SAFER SOLVENTS & AUXILIARIES**  
Choose the safest solvent available for any given step. Minimize the total volume of solvent and auxiliary reagents used, as these make up a large percentage of the waste.
- 6. DESIGN FOR ENERGY EFFICIENCY**  
Choose the best energy intensive chemical transformations and reaction conditions (i.e. ambient temperature & pressure are optimal).
- 7. USE OF RENEWABLE FEEDSTOCKS**  
Use chemicals which are made from renewable (i.e. plant based) sources, rather than other equivalent chemicals originating from petrochemical sources.
- 8. REDUCE DERIVATIVES**  
Minimize the use of temporary derivatives such as protecting groups, acid chlorides or esters to reduce reaction steps, reagents required, and waste created.
- 9. CATALYSIS**  
Use catalytic instead of stoichiometric reagents in reactions. Choose catalysts to improve selectivity, minimize waste, and reduce reaction steps and energy demands.
- 10. DESIGN FOR DEGRADATION**  
Design chemicals that degrade and can be discarded safely. Ensure that both chemicals and their degradation products are not toxic, bioaccumulative, or environmentally persistent.
- 11. REAL-TIME POLLUTION PREVENTION**  
Monitor chemical reactions in real-time as they proceed to prevent the formation of waste or any potentially hazardous and polluting substances.
- 12. SAFER CHEMISTRY FOR ACCIDENT PREVENTION**  
Choose and develop chemical procedures that are safe and thereby minimize the risk of accidents. Know the possible risks and assess them beforehand.

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