

12 Major Principles of Green Chemistry

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Green chemistry or sustainable chemistry is the process of chemical research which promotes manufacturing of products and process that reduces the use and production of risky substances. Green chemistry helps to reduce the negative impact on environment by putting a stop to pollution at its source and making use of very less natural resources.

The 12 Principles of Green Chemistry are:

1. Prevention

The best practice to stop any hazard is to prevent them. It is advisable to prevent formation of waste than cleaning it up after it is formed.

2. Atom Economy

Artificial methods are being designed to increase incorporating all materials that are used in final process of the product generation.

3. Less Hazardous Chemical Syntheses

Synthetic techniques must be implemented for generating substances that holds little or no toxicity to man and nature.

4. Designing Safer Chemicals

A feedstock must be reusable rather than decreasing.

5. Safer Solvents and Auxiliaries

The utilization of supplementary substances like separation agents and solvents must be made should be avoided wherever possible and must only used innocuous substances.

6. Design for Energy Efficiency

Energy requirements must be recognized for their economic and environmental impacts, so it must be reduced. Artificial or synthetic methods must be used only at the correct temperature and pressure.

7. Use of Renewable Feedstocks

A feedstock must be renewable rather than reducing whenever economically and technically practicable.

8. Reduce Derivatives

Unnecessary derivatization that includes protection, modification and blocking group must be avoided when possible.

9. Catalysis

Catalytic reagents (selective) are better to stoichiometric reagents.

10. Design for Degradation

Chemical stuffs must be designed in such a way that at the closing stages of their function they do not stay in the environment and break down into safe degradation products.

11. Real-time pollution Prevention

Analytical methodologies require to be developed to allow real-time, in-process observation and manage the formation of dangerous substances prior.

12. Inherently Safer Chemistry for Accident Prevention

Substances used in chemical processes must be chosen wisely to curtail potential chemical accidents like fires and explosion.

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