



**GREEN CHEMISTRY; SUSTAINABILITY AND INNOVATIVE
APPROACH**

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Abstract

Green chemistry is an approach to the design, manufacture and use of chemical products to intentionally reduce or eliminate chemical hazards. It focuses on the reduction, recycling/elimination of the use of toxic and hazardous chemicals in production processes by finding creative, alternative alternative routes making the desired products that minimize the impact on the environment. Chemistry chemistry is very important to improve our life chemical industries and environment.

Keywords: *Green chemistry, Clean chemistry.Environmental chemistry, Sustainable development.*

Introduction:

Green Technology refers to a type of technology that is considered environmentally friendly based on its production process. Green chemistry is defined as chemistry that design chemical products and processes that are harmless to the environment prevent pollution, some chemical products are remain in the environment after use and they are broken down into harmless component, the god of Green chemistry is to create better, safer chemicals while choosing the safest, most efficient ways to synthesize them. Green is based on 12 principles by Anastas and Warner.

Important 12th principle of Green chemistry.

1. **Prevention**-it is better to prevent waste formation than to treat it after it is formed.
2. **Atom economy**-design synthetic methods to maximum incorporation of all material used into final products.
3. **Less Hazardous**-synthetic methods should, where practicable use or generate materials of low human toxicity and environmental impact.
4. **Safer chemicals**-chemical products design should preserve efficiency whilst reducing toxicity.

5. **Safer solvents**-avoid auxiliary materials, solvent extracts if possible or otherwise make them innocuous.

6. **Energy efficiency**- energy requirements should minimize conduct synthesis at ambient temperature and pressure.

7. **Renewable feedstock**-raw materials should where practicable be renewable.

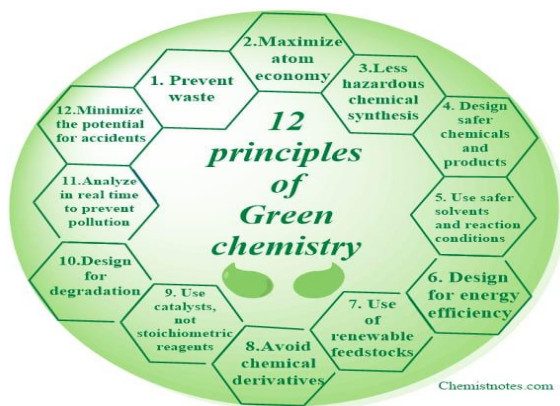
8. **Reduce derivatives**-unnecessary derivatization should be avoided where possible.

9. **Smart catalysis**-selectivity catalyzed processes are superior to be degradable to stoichiometric processes.

10. **Degradable design**-chemical products should be designed to be degradable to innocuous products in disposed of and not be environmentally persistent.

11. **Real time analysis for pollution prevention**-monitor processes in real time to avoid excursion leading to the formation of hazardous materials.

12. **Hazard and accident prevention**-material used in a chemical process should be chosen to minimize hazard and risk for chemical accidents, such as releases, explosions, and fires.



Another principle of Green chemistry for sustainability is an innovative approach.

1. Prevention is always better than to treat waste after it has been created.
2. Conservation of the ecosystem.
3. Development of sustainable society.
4. Development today must not undermine the development and environment needs of present and future generations.
5. Synthesis methods should be designed in such a way that requirements of energy should be minimized.
6. Biodegradable catalyst lowers the activation energy and thus accelerates the rate of reaction.

Green chemistry in everyday life.

Chemistry is a big part of our everyday life. This is the branch of science in different Spheres of human life such as food we eat, air we breathe, and cleansing agents we use, so that even human emotions are sometimes a result of chemical reaction within our body. Chemicals play an important part in our life and we come across many of them in our day to day activities. We are quite aware of chemical uses and in this blog you will see examples of chemicals that keep our life going smoothly, these chemicals are used either in combination from or as some reagents.

Conclusions:

The aim of Green chemistry is to design chemical processes and products that are harmless to human health and the environment. Recently We mainly focus on design and ideas, processes that start from non polluting material. The Green Chemistry approach will be successful only when proper training and

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education will be given to the new generation.

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