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A BRIEF REVIEW ON GREEN CHEMISTRY

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ABSTRACT

Now a days green chemistry is the one of the most latest research topic. The aim the green chemistry is reduce or even eliminates the production of desired product whether it may be any drug, dyes and other chemical compounds. Its main aim is eliminated any harmful production. Produced new product which is not harmful for the environment. It's also goal replacing traditional method of heating like various types of microwave radiation and carbon footprint. Should be reduce as low as possible. It's also described as chemistry that is benign by design, pollution prevention at the molecular level, sustainable chemistry etc.

KEYWORDS: Green chemistry, reduce, environment.

INTRODUCTION

Green chemistry meanly focus on reduce or eliminate the use of polluting substances. Any synthesis or practical when preformed on the laboratory they polluted the atmosphere. The benefits of green chemistry is less wastes, fewer accidents, energy efficient, lower cost of production of regulation, suffer product, protective human health and environment, healthier work place and communities.[1] Meanly chemistry is undeniable a very prominent part of our daily life we cannot avoid them and also chemical development bring new environmental problem and harmful unexpected side effects.[2,3] The green chemistry supports the invention of more environmentally friendly chemical processes which reduced or even eliminate the generation of hazardous substance.[4]

HISTORY OF GREEN CHEMISTRY

- Concept; Trevor Kletz 1978.
- The concept of green chemistry was established at the Environmental Protection Agency in response to the pollution prevention Act of 1990.[5]
- Green Chemistry, Paul Anastas 1991 contain the team on green chemistry.
- Paul Anstas and Johnc. Warner published the book in 1998 "Green Chemistry; Proposition and Practice".[6,7]
- 1999 Royal Society of Chemistry formed the Green Chemistry.[8]

PRINCIPLES OF GREEN CHEMISTRY

1. Prevention of Pollution

In the Green Chemistry to protect the environment prevent waste then neat & cleaned up waste after it is formed[.9]

2. Atom Economy

Verious types synthetic product should be designed the incorporated all materials used in the process into the final product.[10]

3. Designing Safer Chemicals

Chemical products should be designed to maximize the incorporation of all material use in the final porduct which are eco friendly and not harmful.[11,12]

4. Less Hazardous chemical Synthesis

Whenever the synthesis product are design the general substance are use that are not toxic for the environment and human health.

5. Sefar Chemicals

The design chemical products should be non toxic.

6. Design the energy efficiency

For the economic impact and environment minimization should be required the energy. Various types of synthetic process should be conducted at the ambient temperature and pressure.[13,14]

7. Sefar solvent and auxiliaries

(Solvent, Separation agents, etc) Auxiliaries substance should be made harmless as must as possible.

8. Reduce derivatives

Unnecessary substance various types of physical chemical process blocking group, deprotection must be avoid whenever possible.[15]

9. Design of degradation

The synthesis product must be design as much as possible they do not persist in the environment.

10. Use renewable feedstock

Renewable product are must be non toxic for the environment and non toxic.[16,17]

BENEFITS OF GREEN CHEMISTRY

1. Environmental benefits

- Reduce emission and product impacts.
- Lower level of chemicals release to the environment.[18]

2. Business benefits

- Reduce waste treatment.
- Improved resource efficiency and lower raw materials and utility bills.[19,20]

3. Human health

- Various types of rood food or junk food make us un healthy, Safer food intake is the good for our health, and it also gives the disease free body and also make us mentally strong.[21]
- Cleaner air less release of dangerous chemicals to state leading to lower damage to lungs.
- Cleaner water less release of dangerous chemicals wastes to water leading to cleaner drinking and recreational water.[22,23]

4. Economy

- Better performance so that less product is needed to achieve the same function.[24]

CHEMICAL REACTION MAKING MATERIALS SAFTY WITH OUT DAMAGING THEV ENVIROMENT

1. $C_6H_{12}O_6 + 6O_2 \longrightarrow 6H_6O$

This is a chemical equation that represents a chemical response, s that actually occurs with chemicals. It states that glucose reacts with molecular oxygen to produce carbon dioxide and water. The single patch of $C_6H_{12}O_6$ contains six carbon atoms, twelve oxygen atoms, and six Oxygen atoms.[25]

2. $CaCO_3(s) + 2HCl\ (aq) \longrightarrow CO_2(g) + CaCl_2(aq) + H_2O(l)$

The chemical reactions represent calcium carbonate which react with Hydrochloride acid, and formation the carbon dioxide and calcium chloride and water.

Here (s) is solid state, (aq) for a substance for solution, (g) for gas, and (l) for liquid

BALANCING FOR CHEMICAL EQUATION

$CH_4 + Cl_2 \longrightarrow CH_2Cl_2 + HCl$

It has not balance because four hydrogen present on left side and three hydrogen present, 2 chlorine in left side and three chlorine is present on left side, carbon is already balance in this equation, this equation can be balanced for H by putting a two in front of HCL.[26,27]

$CH_4 + Cl_2 \longrightarrow CH_2Cl_2 + 2HCl$

In this equation every think is balanced except chlorine, there two chlorine is left side, but four chlorine is left side, this equation is balance when two chlorine is attach on left side.

$CH_4 + 2Cl_2 \longrightarrow CH_2Cl_2 + 2HCl$

This equation is balance.

2. $CH_4 + Fe_2O_3 \longrightarrow Fe + CO_2 + H_2O$

CH_4 react with $Fe_2\ O_3$ and produce Fe and carbon dioxide and water, the equation is not balanced.

$CH_4 + Fe_2O_3 \longrightarrow Fe + CO_2 + H_2O$

In this equation oxygen is not balanced this equation is balanced when multiplying on three.

$3CH_4 + Fe_2O_3 \longrightarrow Fe + 3CO_2 + 6H_2O$

In this equation twelve oxygen atom is left side and twelve oxygen atom is right side 3so, oxygen atom is balanced. And the further equation is,

$3CH_4 + 4Fe_2O_3 \longrightarrow Fe + 3CO_2 + 6H_2O$

In this equation when put 8 Fe on right side then total equation is balanced. And the further equation is,

$3CH_4 + 4Fe_2O_3 \longrightarrow 8Fe + 3CO_2 + 6H_2O$

In this equation on left fide three carbon and right also three carbon, and 8 iron on left side and 8 iron also present on right side twelve oxygen present on left side and twelve oxygen also present on right side, and twelve hydrogen present on left side and twelve oxygen present on left side so the equation is balanced.[28,29]

YIELD AND ATOM ECONOMY IN CHEMICAL REACTIONS:

1. $CH_4 + 2O_2 \longrightarrow 2H_20 + CO_2$

In this equation methane reacted with oxygen and produce water and carbon dioxide, and the equation is balanced.[30]

Total mass of reactant product	Total mass of desired product atom
$CH_4 + 2O_2$	$2H_2o$
= 16+ 64	=2 ×18
=80	= 36

Total present atom economy is = (mass of desired product/total mass of product)×100

Present atom economy is = 36/80×100

=45%

CONCLUSION

It is conclude that green chemistry not only helps to designing various types of drug and synthesize product, it also help full to our environment. This knowledge give to help various types of industry, university and college student, green chemistry help us to protect our environment. And the green chemistry also eco friendly to our environment.

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