



Green Chemistry is the design of chemical products and processes that reduce and eliminate the use and the generation of hazardous substances. The approach of green chemistry seeks to redesign the materials that make up the basis of our society and our economy—including the materials that produce, store, manufacture and transport our energy—in ways that are benign for humans and the environment and possess intrinsic sustainability. The ultimate aim of green chemistry is to completely cut down the stream of chemicals pouring into the environment and affecting it and the human health too. The concepts and practice of Green Chemistry have developed over nearly 20 years aimed at meeting the “triple bottom line” which is sustainability in economic, social, and environmental performance. By using the 12 principles of green chemistry, the industries can achieve their desired products without harming the environment and human health. Reviews of chemical accidents show that while the chemical industry is safer than other manufacturing jobs, exposure controls can and do fail. The consequence is injury and death to workers, which could have been avoided by working with less hazardous chemistry and more safety. Impacts on human health and the environment from dispersal of hazardous waste are similarly grim, and monumental clean-up problems are faced as a result of the “treatment” rather than “prevention” approach. In Green Chemistry, prevention is the approach to the risk reduction: by minimizing the hazard portion of the equation, using innocuous chemicals and processes, risk cannot increase spontaneously through circumstantial means—accidents, spills, or disposal.

Green chemistry is sustainable in terms of materials because of its minimum efficient use of raw materials and maximum recycling of materials. And in terms of wastes materials, it is sustainable because it does not cause an intolerable accumulation of hazardous-waste products, minimum production of unusable by-products, and other environmentally friendly factors.

Zero waste technology has proven a boon for the industries, in producing their goods without producing waste materials and if producing, then recycling it into the raw materials for further use.

Green Chemistry has been hugely successful in devising ways to reduce pollution through synthetic efficiency, improvements and catalysis in solvent technology. Alternative synthetic methods have been applied to reduce energy consumption in the chemical industry, and bio-based feedstocks are decreasing our reliance on depleted fossil resources.

It is not a solution to all environmental problems but the most fundamental approach to preventing pollution and harmful effects to human health and the environment.

Still many challenges lie ahead, lack of awareness among the stakeholders and researchers does allow the implantation of green chemistry. And even if they know they lack the training in these disciplines which further hampers the implementation of green chemistry on an industrial scale.

Therefore, strategy to solve these issues will be to see where the problems intersect with each other.