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Editorial

Green Chemistry: a route to define new experimental strategies.

Greening chemistry is a relatively new concept which has been developed in the business and regulatory communities as a natural route for the pollution prevention and guarantee a better future for humanity. It is a reality that, in our efforts as specie to improve crop protection, commercial products, and medicines, and our living quality in general, we also caused unintended harm to our planet and humans. So, green chemistry concept is more and more used in the description of project and politics.

Green Chemistry is not politics, is not a public relations ploy and is not a pipe dream. To develop chemical processes and earth-friendly products that will prevent pollution is a priority, and the green chemistry, by the design chemical processes that reduce waste and reduce demand on diminishing resources, the desing and employ of processes that use smaller amounts of energy and the re-use of waste are common examples to examplify the green chemistry concept.

American Chemical Society define 12 principles of green chemistry, theses principles are listed below in order to help in their difussion (*Anastas, P. T.; Warner, J. C. Green Chemistry: Theory and Practice, Oxford University Press: New York, 1998, p.30. By permission of Oxford University Press.*).

- ✓ **Prevention:** It is better to prevent waste than to treat or clean up waste after it has been created.
- ✓ **Atom Economy:** Synthetic methods should be designed to maximize the incorporation of all materials used in the process into the final product.
- ✓ **Less Hazardous Chemical Syntheses:** Wherever practicable, synthetic methods should be designed to use and generate substances that possess little or no toxicity to human health and the environment.
- ✓ **Designing Safer Chemicals:** Chemical products should be designed to affect their desired function while minimizing their toxicity.
- ✓ **Safer Solvents and Auxiliaries:** The use of auxiliary substances (*e.g.*, solvents, separation agents, etc.) should be made unnecessary wherever possible and innocuous when used.
- ✓ **Design for Energy Efficiency:** Energy requirements of chemical processes should be recognized for their environmental and economic impacts and should be minimized. If possible, synthetic methods should be conducted at ambient temperature and pressure.

- ✓ **Use of Renewable Feedstocks:** A raw material or feedstock should be renewable rather than depleting whenever technically and economically practicable.
- ✓ **Reduce Derivatives:** Unnecessary derivatization (*i.e.*, use of blocking groups, protection/deprotection, temporary modification of physical/chemical processes) should be minimized or avoided if possible, because such steps require additional reagents and can generate waste.
- ✓ **Catalysis:** Catalytic reagents, as selective as possible, are superior to stoichiometric reagents.
- ✓ **Design for Degradation:** Chemical products should be designed so that at the end of their function they break down into innocuous degradation products and do not persist in the environment.
- ✓ **Real-time analysis for Pollution Prevention:** Analytical methodologies need to be further developed to allow for real-time, in-process monitoring and control prior to the formation of hazardous substances.
- ✓ **Inherently Safer Chemistry for Accident Prevention:** Substances and the form of a substance used in a chemical process should be chosen to minimize the potential for chemical accidents, including releases, explosions, and fires.

Green chemistry or sustainable chemistry is a way for new projects, new ideas and new goals for a better future.

Thanks,

M. F. Melendrez
Editor-in-Chief