



GREEN CHEMISTRY

THEORY AND PRACTICE

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Green Chemistry: Theory and Practice

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Preface

Green chemistry is not different from traditional chemistry inasmuch as it embraces the same creativity, and innovation that has always been central to classical chemistry. Green chemistry merely pursues those same ideals with additional considerations to those incorporated into the design and implementation of chemistry historically. These considerations, described in this book, reflect the power that the chemist holds not only over the disposition of the chemistry that is created, but also over all of the implications of the chemistry, from its creation, to its use, until its destruction and beyond. Beyond, because a chemist can not only design a substance to have certain characteristics during its useful life, but can also design what that substance will become (or break down into) after its useful life is over.

This book is not a moral judgment on chemistry but it does elucidate the obligations that chemists, as scientists, have in making choices when designing chemical methodologies. Chemistry itself can be neither 'good' nor 'bad' in a moral sense, as it is merely a natural phenomenon following physical laws. Chemists, however, possess the knowledge and skills to make decisions in the practice of their trade that can result in immense benefit to society or cause harm to life and living systems and they therefore have responsibility for the character of the decisions made. So, while the science of chemistry can be neither holy nor evil, people of either amoral, ignorant, or irresponsible character have misused chemistry and have created a popular disdain for the 'central science' and those who make it their trade.

Basic research in green chemistry is needed. The discovery and development of fundamental chemical transformations that are not harmful to the environment will be the driving force that moves this

area forward. Applications of these discoveries will be and have been utilized both for economic and scientific reasons. These methodologies have the potential to affect every aspect of life, just as the field of chemistry has done in the past. Because a synthetic methodology is not sentient, it does not know if it is going to wind up making a pharmaceutical, a paint, or a food additive and thus have a positive impact on all of those chemical products.

It is the chemist who makes these discoveries. It is the chemist who creates the tools, the synthetic methods, that are used throughout industry. Ultimately, because of this role, it is the chemist who has the responsibility for the character of the tools that are in the toolbox. Fortunately for society, it is these same chemists who are solely, uniquely qualified to make those decisions and those discoveries. Green chemistry utilizes the same skills that chemists have always used throughout the history of the science. This book strives to provide a basis and a framework for pursuing the science in the most creative, innovative, and responsible manner possible.

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P.T.A.

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Contents

1 Introduction	1
1.1 The current status of chemistry and the environment	1
1.2 Evolution of the environmental movement	2
1.2.1 Public awareness	2
1.2.2 'Dilution is the solution to pollution'	6
1.2.3 Waste treatment and abatement through command and control	6
1.2.4 Pollution prevention	7
1.2.5 Green chemistry	8
1.3 The role of chemists	9
2 What is green chemistry?	11
2.1 Definition	11
2.2 Why is this new area of chemistry getting so much attention?	12
2.3 Why should chemists pursue the goals of green chemistry?	13
2.4 The root of innovation	16
2.5 Limitations/obstacles	16
3 Tools of green chemistry	21
3.1 Alternative feedstocks/starting materials	21
3.2 Alternative reagents	24
3.3 Alternative solvents	24
3.4 Alternative product/target molecule	25
3.5 Process analytical chemistry	26
3.6 Alternative catalysts	27
4 Principles of green chemistry	29
4.1 It is better to prevent waste than to treat or clean up waste after it is formed	29
4.2 Synthetic methods should be designed to maximize the incorporation of all materials used in the process into the final product	33

4.2.1	Rearrangements	34
4.2.2	Addition	34
4.2.3	Substitution	34
4.2.4	Elimination	34
4.3	Wherever practicable, synthetic methodologies should be designed to use and generate substances that possess little or no toxicity to human health and the environment	34
4.4	Chemical products should be designed to preserve efficacy of function while reducing toxicity	36
4.4.1	What is designing safer chemicals?	36
4.4.2	Why is this now possible?	37
4.5	The use of auxiliary substances (e.g. solvents, separation agents) should be made unnecessary wherever possible and innocuous when used	38
4.5.1	The general use of auxiliary substances	38
4.5.2	Concerns for solvents	38
4.5.3	Environment	39
4.5.4	Supercritical fluids	40
4.5.5	Solventless	41
4.5.6	Aqueous	41
4.5.7	Immobilized	41
4.6	Energy requirements should be recognized for their environmental and economic impacts and should be minimized	42
4.6.1	Energy usage by the chemical industry	42
4.6.2	How energy is used	43
4.6.3	The need to accelerate reactions with heat	43
4.6.4	The need to control reactivity through cooling	43
4.6.5	Separation energy requirements	44
4.6.6	Microwaves	44
4.6.7	Sonic	44
4.6.8	Optimizing the reaction should mean minimizing the energy requirements	44
4.7	A raw material or feedstock should be renewable rather than depleting, wherever technically and economically practicable	45
4.7.1	What are renewable vs. depleting feedstocks?	45
4.7.2	Sustainability	46
4.7.3	Direct environmental effects	46
4.7.4	Indirect environmental effects	46
4.7.5	Limited supply creates economic pressure	47
4.7.6	The political effects of petroleum	47
4.7.7	Concerns about biological feedstocks	48