
Contents

<i>Preface to First Edition</i>	xi
<i>Preface to Second Edition</i>	xiii
Chapter 1. Introduction	1
Historical Aspects	2
Types of Toxic Substance	6
Types of Exposure	8
Dose-Response Relationship	9
Questions	16
Bibliography	17
Chapter 2. Disposition of Toxic Compounds	19
Absorption of Toxic Compounds	19
Distribution of Toxic Compounds	28
Excretion of Toxic Compounds	31
Metabolism of Foreign Compounds	36
Factors Affecting Toxic Responses	48
Questions	51
Bibliography	52
Chapter 3. Types of Exposure and Response	55
Types of Exposure	55
Route of Exposure	55
Types of Toxic Response	56
Detection of Toxic Responses	60
Questions	60
Bibliography	60
Chapter 4. Drugs as Toxic Substances	61
Introduction	61
Paracetamol	62
Hydralazine	63
Halothane	66

Debrisoquine	67
Thalidomide	69
Drug Interactions	69
Altered Responsiveness: Glucose-6-phosphate Dehydrogenase Deficiency	70
Questions	71
Bibliography	71
Chapter 5. Industrial Chemicals	73
Industrial Chemicals	73
Means of Exposure	73
Toxic Effects	74
Vinyl Chloride	75
Cadmium	76
Aromatic Amines	77
Asbestos	78
Legislation	80
Question	81
Bibliography	81
Chapter 6. Food Additives and Contaminants	83
Introduction	83
Tartrazine	85
Saccharin	86
Food Contaminants	87
The Spanish Oil Syndrome	88
Questions	89
Bibliography	90
Chapter 7. Pesticides	91
Introduction	91
DDT	92
Organophosphorus Compounds	96
Paraquat	97
Fluoroacetate	100
Questions	100
Bibliography	101
Chapter 8. Environmental Pollutants	103
Introduction	103
Air Pollution	104
Particulates	107
Acid Rain	108
Lead Pollution	111
Water Pollution	114
Food Chains	115
Mercury and Methylmercury	118

Questions	121
Bibliography	121
Chapter 9. Natural Products	123
Plant Toxins	123
Animal Toxins	125
Fungal Toxins	128
Microbial Toxins	129
Question	129
Bibliography	129
Chapter 10. Household Products	131
Introduction	131
Carbon Monoxide	133
Antifreeze: Ethylene Glycol	135
Alcohol	136
Glue Sniffing and Solvent Abuse	137
Questions	137
Bibliography	137
Chapter 11. Toxicity Testing and Risk Assessment	139
Introduction	139
Acute Toxicity Tests	141
Sub-acute Toxicity Tests	142
Chronic Toxicity Tests	143
Risk Assessment and Interpretation of Toxicological Data	145
Conclusions	149
Questions	149
Bibliography	149
<i>Glossary</i>	151
<i>Index</i>	161

Preface to First Edition

There is an ever increasing use of chemicals in modern society and, because of this, toxicology is becoming an increasingly important subject. Taught courses are now available in different countries at various levels to educate young toxicologists. Currently, however, there are no introductory texts that are reasonably inexpensive, and that serve as an introduction to the subject for students with backgrounds in various disciplines. Thus, there are hardback textbooks, such as *Cassarett and Doull's Toxicology*, for dedicated toxicologists and various specialist texts for particular aspects of toxicology. The smaller textbooks that are available are generally biased towards one particular aspect or interpretation of toxicology, such as the biochemical, pathological, pharmacological or pharmacokinetic aspects. However, most of these are either too expensive or too specialist for the novice toxicologist, the under-graduate or the postgraduate who simply wishes to become familiar with the subject as a whole.

Toxicology is a multidisciplinary subject, which has a large and diffuse literature and it is developing rapidly. Bringing this information together is difficult and time consuming for the student. Consequently there is a need for a cohesive text at the introductory rather than more advanced level. These deficiencies in the market became clear to me whilst being involved in teaching first a Masters course and then a Bachelors degree course in toxicology.

This book, therefore, has arisen from my awareness of the need for an introductory text for myself and for my own students and its content is largely based upon the information I have amassed in the preparation of lectures for these same students. I am indebted to these students for being the foil for this preparation and also to various colleagues for their helpful comments.

London, 1988

Preface to Second Edition

Since the first edition of this book, toxicology has become a more mature science and has advanced in a number of ways, especially at the basic mechanistic level. However, the basic principles of the science have remained largely unchanged. Therefore the revision has not been a major one.

The purpose of this book was to be an introductory text for beginners rather than an encyclopedic toxicology text or a specialist mechanistic monograph. Consequently the revision has been mainly concerned with adding new details to the examples previously used, adding some new examples and updating certain points. The bibliography has however been extensively revised. Also, questions have now been added for use both by teachers and students. More toxicology texts have appeared on the market since the first edition of this book, but these have all been either specialist or relatively large as was previously the case. *Cassarett and Doull's Toxicology* is still available (now in a 4th edition) for dedicated toxicologists and other similar texts have been published. However, these are either too expensive or specialist for the novice toxicologist or scientist who simply wants an overview in order to become familiar with the subject as a whole. Therefore, there is still a need for an introductory text. There are now many more courses and course units in toxicology reflecting greater awareness of the subject and, hence, the need for an introductory text is, if anything, greater than before. I hope this revised edition caters for this need.

I am grateful to all those who have helped directly and indirectly in the preparation of this edition and those who helped in the preparation of the first edition are duly acknowledged in the preface to that edition. Thanks in particular to Mary Fagg for the final preparations to the manuscript and to Gerry Kenna for the information on halothane. Special thanks go to my family for their tolerance and support.

London, July 1994