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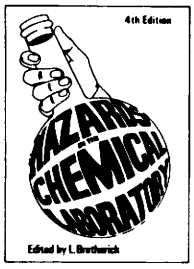

4th Edition

Edited by L. Bretherick, *Safety Consultant*

Hazards in the Chemical Laboratory has become established as an essential handbook of safety practices, measures and toxic effects for laboratories handling dangerous chemicals. Since the last edition was published in 1981 there have been many changes in legislation regulations, precautionary safety methods and toxicity assessments which warrant publication of this new 4th edition. In addition coverage has been expanded to include material relating to legislation and safety practices in the USA.

Brief Contents:
Introduction, Health and Safety at Work Act 1974; Safety Planning and Management; Fire Protection; Reactive Chemical Hazards; Chemical Hazards and Toxicology; Health Care and First Aid; Hazardous Chemicals; Precautions Against Radiations; An American View.

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Hazards in the Chemical Laboratory 4th Edition is edited by Les Bretherick, presently a consultant and formerly a Senior Project Leader with BP Research Centre at Sunbury on Thames. Les Bretherick is well known for his expertise and knowledge in safety matters and is now regarded as a world authority on laboratory hazards. This new edition should therefore be regarded as an authoritative and essential requirement for all academic, governmental and industrial laboratories.

Guide to Safe Practices in Chemical Laboratories

The "Guide to Safe Practices in Chemical Laboratories" is the successor to the "Code of Practice for Chemical Laboratories" published by the Royal Institute of Chemistry in 1976. The broad objective of the Guide remains the same as that of the earlier Code of Practice: to provide general guidance on which specific procedures can be based and to point out relevant statutory requirements.

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(to be published Autumn 1986)

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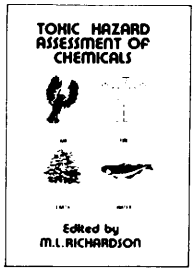

Edited by:
M. Richardson *RSC Environment Group*

The aim of this book is to provide basic guidance on means of retrieving, validating, and interpreting data in order to make a toxicological hazard assessment upon a chemical. This book gives information and advice for many of those concerned with research application and legislation relevant to toxic hazards and should materially assist in the formulation of recommendations, concerning acceptable or safe levels of exposure to particular substances.

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Section 4 – Interpretation of Data
Section 5 – Risk Assessment and Case Histories
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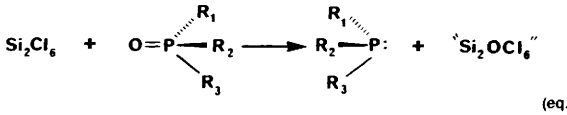
Disilane Dialog

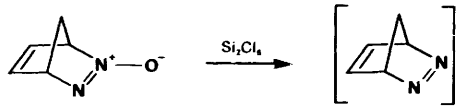
A literature search on **hexachlorodisilane** quickly reveals the interdisciplinary interest in this versatile chemical. The patent literature reflects considerable activity in areas such as catalysis and olefin metathesis,[1,2] deposition and epitaxial doping,[3-5] photoconductive elements,[6,7] and polymer research.[8,9] Organosilane chemistry is another active area[10-13] which includes hetero-π-systems, such as silabenzenes.[14,15]

Use of **hexachlorodisilane** as a reagent in organic synthesis grew from the realization that the Si-Si bond could be cleaved by various agents, most notably oxides.[16,17] Higher silicon chlorides were suggested as reducing agents for use in nonaqueous systems where hydride or metallic reducing agents were incompatible.[18] Its use in the synthesis of optically active phosphines promptly followed (eq. 1).[19] Mild conditions give good yields and high stereospecificities with nearly complete inversion of configuration.

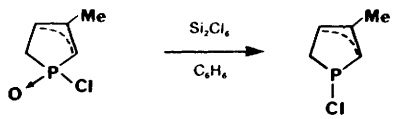


(eq. 1)

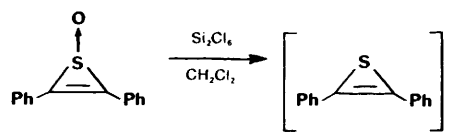
Hexachlorodisilane also reduces amine oxides to amines and sulfoxides to sulfides.[20] However, phosphine sulfides are reduced to phosphines with retention of configuration in high optical yields.[21] Similar results are observed in the reduction of cyclic phosphine oxides,[22] where structural constraints apparently promote the retention of configuration. Applications of this chemistry include conversion of *cis*-azoxyalkanes to unstable *cis*-azo compounds (eq. 2),[23] reduction of 1-halophospholine oxides (eq. 3),[24] and deoxygenation of a diphenylthiirene 1-oxide (eq. 4).[25]



(eq. 2)

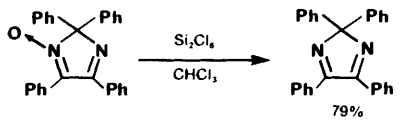


(eq. 3)



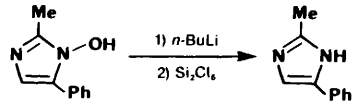
(eq. 4)

In addition to the advantages provided by the mild reaction conditions (ice bath/ambient temperature), the selectivity of **hexachlorodisilane** deoxygenation of N-oxides minimizes product rearrangement and over-reduction of C = N bonds[26] (eq. 5).



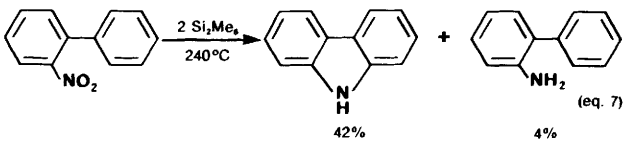
(eq. 5)

This technique has been extended to certain novel dehydroxylations (eq. 6).



(eq. 6)

Hexamethyldisilane is less sensitive to water and oxygen than **hexachlorodisilane** and, along with several other disilanes, has been used in the deoxygenation of nitrobenzenes and nitrotoluenes[27] (eq. 7); severe reaction conditions may limit the exploitation of this method.



(eq. 7)

The chemistry of **trichlorosilane**, a widely used reagent, has been extended to the reduction of bridged cyclic phosphine oxides.[28]

For a computer printout of all our organosilanes write or call our Technical Services Department (toll-free 800-231-8327).

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