

1. Record Nr.	UNINA9910830092703321
Autore	Klopffer Walter <1938->
Titolo	Atmospheric degradation of organic substances [[electronic resource]] : data for persistence and long-range transport potential / / Walter Klopffer and Burkhard O. Wagner
Pubbl/distr/stampa	Weinheim, : Wiley-VCH [Chichester, : John Wiley, distributor], c2007
ISBN	1-281-23920-8 9786611239206 3-527-61163-0 3-527-61162-2
Descrizione fisica	1 online resource (261 p.)
Altri autori (Persone)	WagnerBurkhard O
Disciplina	628.52
Soggetti	Organic compounds - Biodegradation Chemistry, Organic
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Atmospheric Degradation of Organic Substances; Foreword; Preface; Contents; Chapter 1 Significance of Photo-degradation in Environmental Risk Assessment; 1 Introduction; 2 Persistence and Long-range Transport Potential in Chemicals Regulation; 3 Multimedia Models as Tools to Estimate Persistence and Long-range Transport Potential; 4 Data Requirements for Multimedia Models; 5 Estimation of the Rate Constant of Organic Substances with Hydroxyl Radicals; 6 Research Requirements for Photo-degradation of Semi-volatile Substances; 7 Conclusions; References Chapter 2 Abiotic Degradation in the Atmosphere1 Introduction; 2 Photo-degradation in the Homogenous Gas Phase of the Troposphere; 2.1 Indirect Photochemical Reactions; 2.1.1 The Reaction with OH-Radicals; 2.1.1.1 Sources and Sinks of the OH-Radical; 2.1.1.2 Reactions of OH with Organic Compounds; 2.1.2 The Reaction with NO(3)-Radicals; 2.1.2.1 Sources and Sinks of the NO(3)-Radical; 2.1.2.2 Reactions of NO(3) with Organic Compounds; 2.1.3 The Reaction with Ozone; 2.1.3.1 Sources and Sinks of O(3) in the Troposphere; 2.1.3.2

Reactions of O(3) with Organic Compounds

2.2 Direct Photochemical Reactions 2.2.1 Quantum Efficiency; 2.2.2

Examples of Photochemical Reactions in the Gas Phase; 3

Heterogeneous Degradation; 3.1 Degradation on Solid Surfaces; 3.1.1

Introduction; 3.1.2 Degradation on Fly Ash and Soot; 3.1.3 Degradation

on Artificial Aerosols; 3.2 Degradation in Droplets; 3.2.1 Direct

Photochemical Transformation; 3.2.2 Reactive Trace Compounds in

Cloud, Fog and Rainwater; 3.2.3 Reactions of Organic Molecules; 3.2.4

Summary; 4 Experimental; 4.1 Indirect Photochemical Degradation;

4.1.1 Bimolecular Reaction with OH

4.1.1.1 Direct Methods for Measuring $k(\text{OH})$ 4.1.1.2 Indirect Methods for

the Measurement of $k(\text{OH})$; 4.1.2 Bimolecular Reaction with NO(3);

4.1.2.1 Introduction; 4.1.2.2 Absolute Measurement; 4.1.2.3 Relative

Measurements; 4.1.3 Bimolecular Reaction with Ozone; 4.2 Direct

Photo-transformation; 4.2.1 Determination of the Quantum Efficiency

in the Gas Phase; 4.2.1.1 Gas Cuvette and Monochromatic Radiation;

4.2.1.2 Smog-chamber Method; 4.2.2 Outlook; 4.3 Degradation in the

Adsorbed State; 4.3.1 Introduction; 4.3.2 Aerosol Chambers; 4.3.3

Alternative Measurements of $k(\text{OH}, \text{ads})$

5 Additional Information Necessary for Calculating Lifetimes 5.1

Atmospheric Lifetimes; 5.2 Indirect Photochemical Degradation; 5.2.1

Average OH Concentration in the Troposphere; 5.2.2 Average NO(3)

Concentration in the Troposphere; 5.2.3 Average O(3) Concentration in

the Troposphere; 5.3 Direct Photochemical Degradation; 5.3.1

Introduction; 5.3.2 Absorption Spectrum; 5.3.3 Spectral Photon

Irradiance; 5.3.4 Final Comments on Direct and Indirect Photochemical

Transformation; References; Chapter 3 Table of Reaction Rate

Constants of Photo-Degradation Processes; 1 Content of the Table

2 Explanation of the Column Headings

Sommario/riassunto

This compilation on the degradation of 1,100 commercially important chemical products is the first publication to make this knowledge publicly accessible in one book. The data and annotations have been painstakingly assembled over a 10-year period in a collaboration between academia and regulatory authorities. The work explains in detail the methods, including computational ones, for the environmental assessment of volatile and semi-volatile substances, and is rounded off with data tables of degradation rates. A key resource for manufacturers and regulators of such substances.