

Gordon W. Gribble
Editor

Natural Production of Organohalogen Compounds

The Handbook of
Environmental Chemistry

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Gordon W. Gribble



Natural Production Of Organohalogen Compounds:

Natural Production of Organohalogen Compounds Gordon W. Gribble, 2005-07-25 This book summarizes the state of the art knowledge on naturally occurring organohalogens of which more than 3700 are documented The chapters cover all aspects of this field including the structural diversity and sources of organohalogens the mechanisms for their formation and biodegradation the clinical use of dichloroacetate and the synthesis of the powerful anticancer chlorine containing cryptophycin Both biogenic and abiogenic sources of organohalogens are treated the latter of which include volcanic emissions and abiogenic formation in soil Halogenation in humans fungi and in the ocean are covered in separate chapters Sources and biosynthesis of the relatively rare natural organofluorines are also discussed in this volume By better understanding of the role nature plays in the area of organohalogens we can more intelligently regulate the production use and disposal of man made organohalogen compounds

Natural Production of Organohalogen Compounds Gordon W. Gribble, 2003-04-30 This book summarizes the state of the art knowledge on naturally occurring organohalogens of which more than 3700 are documented The chapters cover all aspects of this field including the structural diversity and sources of organohalogens the mechanisms for their formation and biodegradation the clinical use of dichloroacetate and the synthesis of the powerful anticancer chlorine containing cryptophycin Both biogenic and abiogenic sources of organohalogens are treated the latter of which include volcanic emissions and abiogenic formation in soil Halogenation in humans fungi and in the ocean are covered in separate chapters Sources and biosynthesis of the relatively rare natural organofluorines are also discussed in this volume By better understanding of the role nature plays in the area of organohalogens we can more intelligently regulate the production use and disposal of man made organohalogen compounds

Naturally Occurring Organohalogen Compounds - A Comprehensive Update Gordon W. Gribble, 2009-12-02 Despite the long association of organohalogen compounds with human activities nature is the producer of nearly 5 000 halogen containing chemicals Once dismissed as accidents of nature or isolation artifacts organohalogen compounds represent an important and ever growing class of natural products in many cases exhibiting exceptional biological activity Since the last comprehensive review in 1996 Vol 68 this series there have been discovered an additional 2 500 organochlorine organobromine and other organohalogen compounds These natural organohalogens are biosynthesized by bacteria fungi lichen plants marine organisms of all types insects and higher animals including humans These compounds are also formed abiogenically as in volcanoes forest fires and other geothermal events In some instances natural organohalogens are precisely the same chemicals that man synthesizes for industrial use and some of the quantities of these natural chemicals far exceed the quantities emitted by man

Naturally-Produced Organohalogens Anders Grimvall, Ed W.B. de Leer, 2012-12-06 Should the production and use of chlorine and all chlorinated organic compounds be halted in view of their adverse effects on the environment and human health Those in favour argue that certain chlorinated compounds PCBs DDT CFCs etc have large negative environmental

effects The use of chlorine in disinfectants leads to the production of chloroform while bulk products PVC contribute to the production of chlorinated dibenzo p dioxins and dibenzofurans when they are burned Those against argue that chlorine and many chlorinated compounds are essential in the control of human health the prevention of disease transmitted through drinking water that has not been disinfected and that chlorinated compounds are indispensable intermediates in many production processes representing a vast economic value But such discussions often ignore the fact that Nature contributes significantly to the production of chlorinated organic compounds More than 1000 such compounds are known and their contribution to the biogeochemical cycling of chlorine is underestimated Chlorine is organically bound in large quantities to humic materials and natural production mechanisms are known for low molecular weight compounds methyl chloride chloroform chlorinated dibenzo p dioxins and dibenzofurans The role of these compounds in the environment is largely unknown Naturally Produced Organohalogens gives a complete overview of the present state of knowledge on the subject giving a much needed balance to the argument sketched out above

Organohalide-Respiring Bacteria Lorenz Adrian, Frank E. Löffler, 2016-08-03 This book summarizes the current state of knowledge concerning bacteria that use halogenated organic compounds as respiratory electron acceptors The discovery of organohalide respiring bacteria has expanded the range of electron acceptors used for energy conservation and serves as a prime example of how scientific discoveries are enabling innovative engineering solutions that have transformed remediation practice Individual chapters provide in depth background information on the discovery isolation phylogeny biochemistry genomic features and ecology of individual organohalide respiring genera including Dehalococcoides Dehalogenimonas Dehalobacter Desulfitobacterium and Sulfurospirillum as well as organohalide respiring members of the Deltaproteobacteria The book introduces readers to the fascinating biology of organohalide respiring bacteria offering a valuable resource for students engineers and practitioners alike

Naturally Occurring Organohalogen Compounds A. Douglas Kinghorn, Heinz Falk, Simon Gibbons, Yoshinori Asakawa, Ji-Kai Liu, Verena M. Dirsch, 2023-07-24 The present volume is the third in a trilogy that documents naturally occurring organohalogen compounds bringing the total number from fewer than 25 in 1968 to approximately 8 000 compounds to date Nearly all of these natural products contain chlorine or bromine with a few containing iodine and fewer still fluorine Produced by ubiquitous marine algae sponges corals bryozoa nudibranchs fungi bacteria and terrestrial organisms plants fungi bacteria insects higher animals and universal abiotic processes volcanos forest fires geothermal events organohalogens pervade the global ecosystem Newly identified extraterrestrial sources are also documented In addition to chemical structures biological activity biohalogenation biodegradation natural function and future outlook are presented

Anthropogenic Compounds, 2003 Contaminated Soil'93 F. Arendt, G.J. Annokkée, R. Bosman, W.J. van den Brink, 2012-12-06 F Arendt XxX Conference chairman w Harder TNO Conference co chairman The 1993 Berlin conference on contaminated sites is the fourth in a series of meetings initiated by the Netherlands Organization of Applied

Scientific Research TNO in 1985 and later continued with the Karlsruhe Nuclear Research center KfK of Germany The present economic stagnation or recession in many countries is leading to various proposals to reduce the level of costly environmental activities restricted funds are used for really urgent cases rather than precautionary measures The level of soil contamination caused by the former centrally planned economies adds to this tendency The Conference tries to broach this controversy by discussing once more the targets and strategies of soil remediation with follow up use of the site as an important parameter Both new regulations and modifications of existing lists for a tolerable level of contamination are reviewed alike Immobilization and enclosure of pollutants are often less expensive than complete remediation and consequently may grow in significance We consider the conference of great significance for demonstrating the experiences gained with management and remediation of contaminated sites internationally among others to avoid mistakes and excessive costs Two new types of soil contamination became apparent after the end of the cold war Many military sites airfields and training grounds are being abandoned After decades of use large sections and hot spots of these sites are polluted to a high average level

Chlorine and Chlorine Compounds in the Paper Industry Victor Turoski, 1997-09-01 This handbook provides essential information on toxicology risk assessment analysis monitoring human and ecological effects treatment alternatives ecosystem health compliance and much more

Toxicology of Halogenated Hydrocarbons M.A.Q. Khan, R.H. Stanton, 2013-09-17 Toxicology of Halogenated Hydrocarbons Health and Ecological Effects covers the papers of a symposium held at the 2nd Chemical Congress of the North American Continent and the 180th national meeting of the American Chemical Society in fall of 1980 in Las Vegas Nevada USA The book contains papers on human exposure and health effects hepatotoxicity and carcinogenicity and cytotoxicity teratogenicity mutagenicity and neurotoxicity The text also presents papers on the metabolism and toxicodynamics of halogenated hydrocarbons as well as the embryotoxicity and environmental fate related to halogenated hydrocarbons in animals and humans

Progress in the Chemistry of Organic Natural Products, 2012-12-06 The objective of this ASI was to bring together specialists in several complex variables many of whom have contributed to complex potential theory and specialists in potential theory all of whom have contributed to several complex variables together with young researchers and graduate students for an interchange of ideas and techniques Not only was the status of current research presented but also the relevant background much of which is not yet available in books The following topics and interconnections among them were discussed 1 Real and Complex Potential Theory Capacity and approximation basic properties of plurisubharmonic functions and methods to manipulate their singularities and study their growth Green functions Chebyshev type quadratures electrostatic fields and potentials propagation of smallness 2 Complex Dynamics Review of complex dynamics in one variable Julia sets Fatou sets background in several variables Henon maps ergodicity use of potential theory and multifunctions 3 Banach Algebras and Infinite Dimensional Holomorphy Analytic multifunctions spectral theory analytic functions on a Banach space semigroups of holomorphic isometries Pick

interpolation on uniform algebras and Von Neumann inequalities for operators on a Hilbert space The basic notion of complex potential theory is that of a plurisubharmonic function

Encyclopedia of Environmental Management, Four Volume Set Sven Erik Jorgensen, 2012-12-13 Winner of an Outstanding Academic Title Award from CHOICE Magazine Encyclopedia of Environmental Management gives a comprehensive overview of environmental problems their sources their assessment and their solutions Through in depth entries and a topical table of contents readers will quickly find answers to questions about specific pollution and management issues Edited by the esteemed Sven Erik J rgensen and an advisory board of renowned specialists this four volume set shares insights from more than 500 contributors all experts in their fields The encyclopedia provides basic knowledge for an integrated and ecologically sound management system Nearly 400 alphabetical entries cover everything from air soil and water pollution to agriculture energy global pollution toxic substances and general pollution problems Using a topical table of contents readers can also search for entries according to the type of problem and the methodology This allows readers to see the overall picture at a glance and find answers to the core questions What is the pollution problem and what are its sources What is the big picture or what background knowledge do we need How can we diagnose the problem both qualitatively and quantitatively using monitoring and ecological models indicators and services How can we solve the problem with environmental technology ecotechnology cleaner technology and environmental legislation How do we address the problem as part of an integrated management strategy This accessible encyclopedia examines the entire spectrum of tools available for environmental management An indispensable resource it guides environmental managers to find the best possible solutions to the myriad pollution problems they face Also Available Online This Taylor Francis encyclopedia is also available through online subscription offering a variety of extra benefits for researchers students and librarians including Citation tracking and alerts Active reference linking Saved searches and marked lists HTML and PDF format options Contact us to inquire about subscription options and print online combination packages US Tel 1 888 318 2367 email e reference taylorandfrancis com International Tel 44 0 20 7017 6062 email online sales tandf co uk

Reviews of Environmental Contamination and Toxicology 188 George Ware, 2007-04-03 Reviews of Environmental Contamination and Toxicology attempts to provide concise critical reviews of timely advances philosophy and significant areas of accomplished or needed endeavor in the total field of xenobiotics in any segment of the environment as well as toxicological implications

Naturally-Produced Organohalogens Anders Grimvall, Ed W.B. de Leer, 1995-05-31 Should the production and use of chlorine and all chlorinated organic compounds be halted in view of their adverse effects on the environment and human health Those in favour argue that certain chlorinated compounds PCBs DDT CFCs etc have large negative environmental effects The use of chlorine in disinfectants leads to the production of chloroform while bulk products PVC contribute to the production of chlorinated dibenzo p dioxins and dibenzofurans when they are burned Those against argue that chlorine and many chlorinated compounds are essential in the control of human health the prevention of disease

transmitted through drinking water that has not been disinfected and that chlorinated compounds are indispensable intermediates in many production processes representing a vast economic value. But such discussions often ignore the fact that Nature contributes significantly to the production of chlorinated organic compounds. More than 1000 such compounds are known and their contribution to the biogeochemical cycling of chlorine is underestimated. Chlorine is organically bound in large quantities to humic materials and natural production mechanisms are known for low molecular weight compounds: methyl chloride, chloroform, chlorinated dibenzo-p-dioxins and dibenzofurans. The role of these compounds in the environment is largely unknown. Naturally Produced Organohalogens gives a complete overview of the present state of knowledge on the subject, giving a much needed balance to the argument sketched out above. Every Molecule Matters Simon

Cotton, 2025-09-10. Every Molecule Matters is a successor to the author's earlier Every Molecule Tells a Story and tells the story of a wide range of molecules. These range from the familiar odours that enhance the pleasure of eating and the spices that add piquancy to the vitamins vital to our survival, as well as the ways in which insects and plants use chemicals to protect themselves. There's controversy surrounding the compounds of chlorine which encompass life supporting anaesthetics and natural antibiotics as well as insecticides like DDT which saved innumerable lives but became an environmental cause célèbre. Through the addictive power of nicotine, smoking tobacco transformed from a curiosity imported from the Americas into a megapound industry that has caused significant human illness and death. And how safe is vaping? Discover the painkillers that have become drugs of abuse and smile at the smelly sulfur compounds that serve as unpleasant human odorants and defence molecules for skunks, control natural cycles in the environment or act as flavourings in wine. You will discover them all here. This book showcases the structures of hundreds of compounds used by humans, animals and plants. Some are beneficial, some are not. Find out here why you should be better informed about them. This collection of molecules includes human issues such as the chemistry of vaping and drugs of abuse including spice nitazenes and fentanyl. Chemistry of Everyday includes vitamins and the molecules that give foods their aromas and appetizing appeal. The chemistry of nature: how plants and insects use chemicals to defend themselves against potential predators, whether humans, birds, animals or other insects. Organohalogen compounds encompassing the atmosphere-damaging CFCs and their replacements and the chlorine compounds that are important medicines, e.g. vancomycin. Using isotopes from archaeologists faced by mysteries of ancient Rome and silver from Spanish conquistadors to tracking down the origin of South American cocaine and solving the Scissor Sister murder case.

Organofluorines A.H. Neilson, 2002-07-03. This volume, written by a range of international experts, covers a wide range of topics involving organic fluorine compounds. Each chapter is preceded by a summary and includes extensive illustrations and references. The chapters cover atmospheric chemistry, application of ^{19}F NMR, partition, degradation and transformation, naturally occurring organic fluorine compounds, toxicology of perfluoroalkanes and phosphorofluoridates, and application of aromatic compounds to the elucidation of the mechanism of cytochrome P450.

Next Generation Biomonitoring: Part 2, 2018-10-22 Next Generation Biomonitoring Part Two Volume 59 the latest release in the Advances in Ecological Research series is the second part of a thematic on ecological biomonitoring It includes specific chapters that cover aquatic volatile metabolomics using trace gases to examine ecological processes next generation approaches to rapid monitoring Bio aerosol and the link between human health and environmental microbiology NGB in Canadian wetlands CELLDEX global monitoring of functional responses Citizen Science and Biomonitoring and more Provides information that relates to a thorough understanding of the field Deals with topical and important reviews on the physiology populations and communities of plants and animals

Microbial Reductive Dechlorination of Chlorinated Ethenes Benjamin Matthew Griffin, 2003 *Chlorine Cycling in Terrestrial Environments* Malin Montelius, 2016-03-08

Chlorinated organic compounds Clorg are produced naturally in soil Formation and degradation of Clorg affect the chlorine Cl cycling in terrestrial environments and chlorine can be retained or released from soil Cl is known to have the same behaviour as radioactive chlorine ^{36}Cl a long lived radioisotope with a half life of 300 000 years ^{36}Cl attracts interest because of its presence in radioactive waste making ^{36}Cl a potential risk for humans and animals due to possible biological uptake This thesis studies the distribution and cycling of chloride Cl and Clorg in terrestrial environments by using laboratory controlled soil incubation studies and a forest field study The results show higher amounts of Cl and Clorg and higher chlorination rates in coniferous forest soils than in pasture and agricultural soils Tree species is the most important factor regulating Cl and Clorg levels whereas geographical location atmospheric deposition and soil type are less important The root zone was the most active site of the chlorination process Moreover this thesis confirms that bulk Clorg dechlorination rates are similar to or higher than chlorination rates and that there are at least two major Clorg pools one being dechlorinated quickly and one remarkably slower While chlorination rates were negatively influenced by nitrogen additions dechlorination rates seem unaffected by nitrogen The results implicate that Cl cycling is highly active in soils and Cl and Clorg levels result from a dynamic equilibrium between chlorination and dechlorination Influence of tree species and the rapid and slow cycling of some Cl pools are critical to consider in studies of Cl in terrestrial environments This information can be used to better understand Cl in risk assessment modelling including inorganic and organic ^{36}Cl Klorerade organiska föreningar Clorg bildas naturligt i mark och påverkar klorrets kretslopp genom att de stannar kvar längre i marken Detta stabila kloran ses ha samma egenskaper som klor 36 som är en långlivad radioisotop med en halveringstid på 300 000 år Klor 36 förekommer i olika typer av radioaktivt avfall och om klor 36 sprids i naturen finns det en potentiell risk för människor och djur genom biologiskt upptag Syftet i denna avhandling är att öka kunskapen om fördelningen och cirkulationen av klorid Cl och Clorg i terrestra miljöer med hjälp av studier i laboratoriemiljö samt en fältstudie i skogsmiljö Resultaten visar att bildningshastigheten av Clorg är hög i barrskogsjord och rotzonen tycks vara en aktiv plats Det finns också en stor mängd Cl och Clorg i barrskogsjordar i betesmark och jordbruksmark Den mest betydande faktorn som styr halterna av Cl och Clorg

är till stor del geografiskt i de atmosfäriska nedfallen och jordmånen är av mindre betydelse. Bildning och nedbrytning av klorer sker med liknande hastigheter men det tycks finnas två former av klor i jorden varav ett bryts ner snabbt och ett mer långsamt. Bildningshastigheten av klorer i jordar med höga halter av kväve medan nedbrytningshastigheterna inte påverkas av kväve. Slutsatsen från studiernas resultat är att klor i hög grad är aktivt i mark och att klor och klorer halterna bestäms av en dynamisk jämvikt mellan bildning och nedbrytning av klor. I studier av klor i terrestra miljöer bör till stor del inverkan och nedbrytning av olika klorformer beaktas då det kan ge varierande uppehållstider av klor och klorer i mark. Denna information är viktig vid riskbedömningar av hur radioaktivt klor kan spridas och cirkulera vid en eventuell kärnkraftsolycka.

Biocombinatorial Approaches for Drug Finding W. Wohlleben, T. Spellig, B. Müller-Tiemann, 2007-01-19. Genome and proteome based research is generating a significant increase in the number of available drug targets. Correspondingly there is an increasing need for novel diverse compounds particularly based on natural compounds as screening resource. The purpose of the Ernst Schering Research Foundation Workshop 51 was to provide a forum for an open exchange on perspectives and limitations of biocombinatorial synthesis and the significance of this technology for future drug discovery in light of this challenge. Experts from academia and industry provided contributions covering the significance of natural compounds for state of the art drug discovery, the underlying basic principle for the biosynthesis of highly complex compounds and the scope and limitations of combinatorial biosynthesis regarding formation, identification, optimisation, isolation and manufacturing of novel biologically active entities.

Decoding **Natural Production Of Organohalogen Compounds**: Revealing the Captivating Potential of Verbal Expression

In a period characterized by interconnectedness and an insatiable thirst for knowledge, the captivating potential of verbal expression has emerged as a formidable force. Its power to evoke sentiments, stimulate introspection, and incite profound transformations is genuinely awe-inspiring. Within the pages of "**Natural Production Of Organohalogen Compounds**," a mesmerizing literary creation penned by way of a celebrated wordsmith, readers attempt an enlightening odyssey, unraveling the intricate significance of language and its enduring effect on our lives. In this appraisal, we shall explore the book's central themes, evaluate its distinctive writing style, and gauge its pervasive influence on the hearts and minds of its readership.

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