

Natural Attenuation of Fuels and Chlorinated Solvents in the Subsurface



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Natural Attenuation Of Fuels And Chlorinated Solvents In The Subsurface:

Natural Attenuation of Fuels and Chlorinated Solvents in the Subsurface Todd H. Wiedemeier, Hanadi S. Rifai, Charles J. Newell, John T. Wilson, 1999-03-08 The first comprehensive guide to one of today's most innovative approaches to environmental contamination Natural attenuation is gaining increasing attention as a nonintrusive cost effective alternative to standard remediation techniques for environmental contamination This landmark work presents the first in depth examination of the theory mechanisms and application of natural attenuation Written by four internationally recognized leaders in this approach the book describes both biotic and abiotic natural attenuation processes focusing on two of the environmental contaminants most frequently encountered in groundwater fuels and chlorinated solvents The authors draw on a wealth of combined experience to detail successful techniques for simulating natural attenuation processes and predicting their effectiveness in the field They also show how natural attenuation works in the real world using numerous examples and case studies from a wide range of leading edge projects nationwide involving fuel hydrocarbons and chlorinated solvents Finally they discuss the evaluation and assessment of natural attenuation and explore the design of long term monitoring programs An indispensable reference for anyone working in environmental remediation *Natural Attenuation of Fuels and Chlorinated Solvents in the Subsurface* is essential reading for scientists and engineers in a range of industries as well as state and federal environmental regulators and professors and graduate students in environmental or chemical engineering

In Situ Remediation of Chlorinated Solvent Plumes Hans F. Stroo, C. Herb Ward, 2010-09-10 In the late 1970s and early 1980s our nation began to grapple with the legacy of past disposal practices for toxic chemicals With the passage in 1980 of the Comprehensive Environmental Response Compensation and Liability Act CERCLA commonly known as Superfund it became the law of the land to remediate these sites The U S Department of Defense DoD the nation's largest industrial organization also recognized that it too had a legacy of contaminated sites Historic operations at Army Navy Air Force and Marine Corps facilities ranges manufacturing sites shipyards and depots had resulted in widespread contamination of soil groundwater and sediment While Superfund began in 1980 to focus on remediation of heavily contaminated sites largely abandoned or neglected by the private sector the DoD had already initiated its Installation Restoration Program in the mid 1970s In 1984 the DoD began the Defense Environmental Restoration Program DERP for contaminated site assessment and remediation Two years later the U S Congress codified the DERP and directed the Secretary of Defense to carry out a concurrent program of research development and demonstration of innovative remediation technologies As chronicled in the 1994 National Research Council report *Ranking Hazardous Waste Sites for Remedial Action* our early estimates on the cost and suitability of existing technologies for cleaning up contaminated sites were wildly optimistic Original estimates in 1980 projected an average Superfund cleanup cost of a mere \$3 million

Practical Handbook of Environmental Site Characterization and Ground-Water Monitoring David M. Nielsen, 2005-09-28 Published in 1991 the first edition of *The Practical Handbook of*

Ground Water Monitoring quickly became the gold standard reference on the topic of ground water monitoring. But as in all rapidly evolving fields, regulations change, technology advances, methods improve, and research reveals flaws in prior thinking. As a consequence, books that document the state of the science, even widely acknowledged definitive works, become outdated and need to be rewritten periodically to stay current. Reflecting this and renamed to highlight its wider scope, *The Practical Handbook of Environmental Site Characterization and Ground Water Monitoring*, Second Edition, provides an updated look at the field. Completely revised, the book contains so much new information that it has doubled in size. Containing the most up-to-date information available, this second edition emphasizes the practical application of current technology. It covers environmental site characterization and ground water monitoring in great detail, from the federal regulations that govern environmental investigations to the various direct and indirect methods of investigating and monitoring the subsurface, to the analysis and interpretation of complex sets of environmental data. Cheaper, better, faster was the mantra of the 1990s, resulting in more streamlined approaches to both environmental site characterization and ground water monitoring, but also pitting the application of good science against the mandate to get a project done as quickly and inexpensively as possible. This book provides unbiased technical discussions of the tremendously powerful tools developed in the last decade, helping environmental professionals strike a balance between good science and economics.

Natural Attenuation of Chlorinated Solvents, Petroleum Hydrocarbons, and Other Organic Compounds Bruce C. Alleman, Andrea Leeson, 1999. Natural attenuation was first demonstrated at sites with hydrocarbon contamination, but recent studies at sites contaminated by chlorinated compounds have shown that this approach often has merit for these more challenging contamination problems. This volume covers natural attenuation in media ranging from deep aquifers to shallow soils and for contaminants ranging from fuels to solvents to herbicides and offers the reader a comprehensive overview of case studies that represent the state of the art in natural attenuation approaches to site remediation.

Handbook of Solvents George Wypych, 2001. A comprehensive, extensive textual analysis of the principles of solvent selection and use, the handbook is intended to help formulators select ideal solvents, safety coordinators to protect workers, and legislators and inspectors to define and implement technically correct public safeguards for use, handling, and disposal.

Natural Attenuation of Environmental Contaminants Andrea Leeson, 2001. The symposium included 600 presentations in 50 sessions on bioremediation and supporting technologies used for a wide range of contaminants already in or poised to invade soil, groundwater, and sediment. Three hundred and fifty-two papers were selected and organized into ten volumes. Volume two's articles address the use of natural attenuation to remediate sites with a variety of hydrocarbons and chlorinated compounds contaminating porous media and groundwater. Methods of encouraging naturally occurring microbial activity are discussed along with sampling, assessment, and long-term monitoring techniques and devices. Articles average eight pages and contain abstracts and references.

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Natural Attenuation Considerations

and Case Studies Godage B. Wickramanayake, Arun R. Gavaskar, Mark E. Kelley, 2000 Natural Attenuation Considerations Natural Attenuation Case Studies I Chloroethenes Natural Attenuation Case Studies II Other Organics and Metals

Anaerobic Degradation of Chlorinated Solvents Victor Magar, 2001 The symposium included 600 presentations in 50 sessions on bioremediation and supporting technologies used for a wide range of contaminants already in or poised to invade soil groundwater and sediment Three hundred and fifty two papers were selected and organized into ten volumes Volume seven's articles examine the use of enhanced anaerobic biotransformation processes for treatment of chlorinated solvents in soil and groundwater Electron donors used to stimulate reductive dechlorination processes in lab and field scale demonstrations are also presented Articles average eight pages and contain abstracts and references Annotation copyrighted by Book News Inc Portland OR

Environmental Geochemistry B. Sherwood Lollar, 2005-05-21 The Treatise on Geochemistry is the first work providing a comprehensive integrated summary of the present state of geochemistry It deals with all the major subjects in the field ranging from the chemistry of the solar system to environmental geochemistry The Treatise on Geochemistry has drawn on the expertise of outstanding scientists throughout the world creating the reference work in geochemistry for the next decade Each volume consists of fifteen to twenty five chapters written by recognized authorities in their fields and chosen by the Volume Editors in consultation with the Executive Editors Particular emphasis has been placed on integrating the subject matter of the individual chapters and volumes Elsevier also offers the Treatise on Geochemistry in electronic format via the online platform ScienceDirect the most comprehensive database of academic research on the Internet today enhanced by a suite of sophisticated linking searching and retrieval tools Bioremediation

and Natural Attenuation Pedro J. Alvarez, Walter A. Illman, 2006 Publisher Description **Understanding Chlorinated Hydrocarbon Behavior in Groundwater : Investigation, Assessment and Limitations of Monitored Natural Attenuation**, 2003 Remediation of Hazardous Waste in the Subsurface Clayton J. Clark, Angela Stephenson Lindner, 2006

Most recent chemical and biological methods of removing hazardous chemicals from the subsurface environment are addressed and an up to date review of predicting removal effectiveness by these methods using various modeling and laboratory scale experimental approaches is provided Geochemical Processes Horst D. Schulz, Georg Teutsch, 2002-12-25 This book is a result of the Priority Programme 546 run by the Deutsche Forschungsgemeinschaft It presents the various ideas concepts and conclusions that resulted from this Programme on the subject of geochemical processes with long term effects in anthropogenically influenced drainage and ground water **Proceedings of the Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection, and Remediation Conference**, 1998 Bioremediation

of MTBE, Alcohols, and Ethers Victor Magar, 2001 Biobarriers and Characterization of MTBE Degrading Cultures Natural Attenuation of MTBE In Situ MTBE Biodegradation MTBE Cometabolism *Acta Universitatis Carolinae*, 2002 *Risk, Regulatory, and Monitoring Considerations* Godage B. Wickramanayake, 2000 Regulatory Perspectives and Decision Making

Advances in Site Characterization Environmental Data Management Geostatistics and GIS Advances in Analytical and Detection Techniques Risk Based Analyses for Remediation Human Health Ecological Risk Assessment Technical Impracticability Long Term Monitoring and Optimization Innovative Monitoring and Control Systems IAHS Publication,1981 Oil & Gas Science and Technology ,2003 *Hydrogeology and Groundwater Modeling* Neven Kresic,2006-10-26 Coupling the basics of hydrogeology with analytical and numerical modeling methods Hydrogeology and Groundwater Modeling Second Edition provides detailed coverage of both theory and practice Written by a leading hydrogeologist who has consulted for industry and environmental agencies and taught at major universities around the world this unique

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