

Trace Elements in Coal

Environmental and Health Significance

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ABSTRACT

Trace elements can have profound adverse effects on the health of people burning coal in homes or living near coal deposits, coal mines, and coal-burning power plants. Trace elements such as arsenic emitted from coal-burning power plants in Europe and Asia have been shown to cause severe health problems. Perhaps the most widespread health problems are caused by domestic coal combustion in developing countries where millions of people suffer from fluorosis and thousands from arsenism. Better knowledge of coal quality characteristics may help to reduce some of these health problems. For example, information on concentrations and distributions of potentially toxic elements in coal may help delineate areas of a coal deposit to be avoided. Information on the modes of occurrence of these elements and the textural relations of the minerals in coal may help to predict the behavior of the potentially toxic trace metals during coal cleaning, combustion, weathering, and leaching.

Index Entries: Coal combustion; health impacts; trace elements; trace metals; coal quality.

INTRODUCTION

Trace elements in the environment come from a variety of natural and anthropogenic sources (1). Perhaps none of the sources is as misunderstood as coal combustion. Under certain conditions, the emission of trace elements from coal combustion can be relatively benign. Under other conditions, these emissions present a potentially deadly threat that has caused severe health problems for tens of millions of people. Ironically, the concerns over the environmental and human health impacts of coal combustion appear to be inversely proportional to the damage done.

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AW Rasmussen



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Trace Elements in Coal - Valkovic V.,1983 Elemental Analysis Of Coal And Its By-products - Proceedings Of The Conference George Vourvopoulos,John Thomas Riley,1992-04-30 **Bioprocessing and Biotreatment of Coal** Donald L. Wise,2017-11-22 Within technical overview sections on such emerging areas as bioprocessing bioconversion biosolubilization biosystems and biocleaning this handsomely illustrated reference specifically surveys pioneering work in the genetic production of sulfatase enzymes for removing organic sulfur from coal r **Coal Production and Processing Technology** M.R. Riazi,Rajender Gupta,2015-11-05 Coal Production and Processing Technology provides uniquely comprehensive coverage of the latest coal technologies used in everything from mining to greenhouse gas mitigation Featuring contributions from experts in industry and academia this book Discusses coal geology characterization beneficiation combustion coking gasification and liquef **X-Ray Spectroscopy in Environmental Sciences** Vlado Valkovic,2024-12-06 Applications of X ray spectroscopy to air water and soil pollution studies are covered in detail in this essential publication Air pollution can hardly be studied by any other method to such an extent Much of our present knowledge in this field was obtained by laboratories using many of the same methods described in this work A number of examples illustrate the contribution of X ray emission spectroscopy and its capabilities in the area of water pollution Examples of soil pollution studies by the use of biological monitors is also presented A comprehensive reference list with the help of author and subject indices provides direction for further investigation *Coal Geology of China* Shifeng Dai,Robert B. Finkelman,2020-04-28 Coal and China to some extent have become synonymous China is by far the largest user of coal in the world In 2016 coal production in China amounted to 3 21 billion tons about half of the total global coal production Coal consumption accounts for more than 65% of primary energy consumption in China The Chinese coal industry greatly contributes to the economic development in China the second largest economy in the world However periodically ubiquitous images of smog blanketing major Chinese cities are viewed all over the world Coal combustion is one of the important contributors to smog which is considered to be a major environmental and human health problem for China and other countries News stories also highlight the periodic coal mine disasters that kill hundreds of Chinese coal miners annually The need to address these and other human health environmental and mine safety issues and to maximize resource recovery and use justifies a vigorous coal research effort This book brings together experts on almost every aspect of coal geology coal production composition and use of the coal and its by products and coal s environmental and human health impacts The chapters in this book were originally published in a special issue of the International Geology Review *Energy Research Abstracts* ,1988 *ERDA Energy Research Abstracts* United States. Energy Research and Development Administration,1977 Fossil Energy Update ,1980 *Inorganic Geochemistry of Coal* Shifeng Dai,Robert B. Finkelman,James C. Hower,David French,Ian T. Graham,Lei Zhao,2023-06-22 Inorganic Geochemistry of Coal explains how to determine the concentrations and modes of occurrence of elements in coal

how to diminish adverse effects of toxic elements on the environment and human health which elements in coal could be industrially utilized and which elements can be successfully used as indications for deciphering depositional environments and tectonic evolution As coal use will remain at an all time high for the next several decades there is a critical need for understanding the properties of this fuel to ensure efficient use encourage its economic by product potential and to help minimize its negative technological environmental and health impacts Features dozens of never before published illustrations of critical features of the inorganic geochemistry of coal Covers both the theory and applications of the topic including case studies to serve as real world examples Includes a chapter on the health and environmental impacts of the mining development and use of coal *Environmental Health Perspectives* ,1993 *Indexes* United States. Environmental Protection Agency,1983 **ERDA Research Abstracts** United States. Energy Research and Development Administration,1976 **ERDA Energy Research Abstracts** United States. Energy Research and Development Administration. Technical Information Center,1976 *Nuclear Science Abstracts* ,1974 *Scientific and Technical Aerospace Reports* ,1981 **Fossil Fuels Utilization** Richard Markuszewski,American Chemical Society. Meeting,1986 **Energy: a Continuing Bibliography with Indexes** ,1981 **Energy Research Abstracts** ,1987 *Analysis of Airborne Particles by Physical Methods* Hanns Malissa,J.W. Robinson,2018-01-18 An accurate and complete characterization of the solid pollutants in air taking into account the physio chemical and technological data available concerning the origin transformation and the effects of dust is a synoptic approach known as SISintegrated dust analysis and is the underlying concept of this book

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