

DNAPL presence. This book reports on work funded by the US Environmental Protection Agency to improve our ability to locate or infer the presence of DNAPLs at contaminated sites.

The book begins with an excellent executive summary which addresses each key finding and quickly provides the reader with a capsule view of the state-of-the-art. Chapter 2 provides the objectives for the work being reported on and frames key questions that will be answered in subsequent chapters. Chapter 3 provides information on sources and uses of common DNAPL chemicals as well as their physical/chemical properties.

Chapter 4 contains a discussion of fluid and media properties that affect the transport of DNAPLs in the environment. This is an excellent reference source that describes phenomena and provides empirical observations to help the reader understand how DNAPLs will distribute themselves in geologic media and, hence, where to look for them. Chapter 5 integrates the information on properties into conceptual models of DNAPL transport. Algorithms and models are provided to predict transport rates and disposition of DNAPLs in the environment. This work provides an excellent baseline for the development of site investigation objectives and strategies in Chapter 6.

Chapter 7 describes the site characterization process and an approach to inferring that DNAPLs may be present. This is followed by descriptions of noninvasive and invasive investigation techniques in Chapter 8 and 9, respectively. Technique applications, limitations, availability and costs are provided. A similar discussion of analytical methods is provided in Chapter 10. Chapter 11 provides a series of case studies which help integrate the information from the previous chapters and provide real life examples of how investigations proceed and typical results from those investigations. This chapter is of particular value since for many sites, DNAPL presence will be inferred, but never confirmed.

A list of research needs is provided as well as extensive references. Appended materials include physical/chemical property data for common DNAPL chemicals, a directory of symbols, parameters, and dimensions, and a glossary.

I recommend this book for anyone who is faced with the need to investigate a site where DNAPL chemicals may be present. While there are no significant breakthroughs that greatly enhance our ability to confirm the presence of DNAPLs, the book provides a very sound phenomenological basis from which the investigators can develop an optimum strategy utilizing available technologies.

GAYNOR W. DAWSON

*Reproductive Toxicology*, edited by Mervyn Richardson, VCH, Weinheim, Germany, ISBN 3-527-28561-X, 1993, 306 pp., DM 195

This volume presents some of the papers given at a symposium sponsored by the Toxicology Group of the Royal Society of Chemistry in 1992, with the addition of other contributions from Central and Eastern Europe.

The first chapter outlines the approach used by the International Agency for Research on Cancer in evaluating toxicants. Based on this system, epidemiological

studies of persons working with substances or processes considered carcinogenic to humans, including arsenic and compounds, vinyl chloride, boot and shoe manufacture or repair, iron or steel foundry work, the rubber industry, or working as a painter, show only limited or a low level of any evidence for teratogenic effects.

The following two chapters cover the Soviet and Chinese literature on the subject. However, the epidemiological studies referenced often were too small to afford definite conclusions. In addition, the discussion for specific compounds often did not differentiate very clearly between animal and human studies.

A fourth chapter by a Bulgarian author affords a balanced yet critical review of the data on adverse effects of chemicals on human pregnancy. A section on male reproductive toxicology has chapters on animal studies with cyclophosphamide, animal and human results with chromium, monitoring spermatogenesis, and one on a survey of offspring of testicular cancer patients who had been treated with a combination of chemotherapeutic agents, including cisplatin. Unfortunately, the number of cases was too small for a definite conclusion, but the results were suggestive of male germ cell injury in the genesis of some childhood malignancies.

The section on female reproductive toxicology has a chapter on the adverse effects of pesticides on pregnancy outcomes, including low birth weight and pregnancy loss, in female greenhouse workers in the Ukraine. A chapter from a German author discusses the effects of pesticides and heavy metals in decreasing fertility, with possible therapeutic intervention. The final section on human health effects covers varied topics, from testing for reproductive toxicity, with comparisons of regulations in different countries, to risk assessment, epidemiological research, occupations with possible hazards, and a chapter on the toxicity of khat, a substance of abuse in Eastern Africa and the Arabian Peninsula.

There is a final chapter on the toxicity of aluminum, which, although showing some effects in animals at high doses, has little apparent effect in humans at the usual exposure levels. The editorial epilogue attempts to summarize the conclusions from the various chapters.

The value of the book rests in the contributions from specific countries with the reports of the experience in these areas, as well as the literature citations pertaining to them. There is an appreciable degree of overlap in some of the chapters. Moreover, the editorial work was extremely lax; more attention to this aspect of the process would have provided a better product. Lacking also were any papers by authors from the Americas, Japan, or Australia. For a balanced presentation, some representatives from these areas of the world should have been included.

ELIZABETH K. WEISBURGER

*Taking an Exposure History* (Case Studies in Environmental Medicine, No. 26), Agency for Toxic Substances and Disease Registry (ATSDR), US Department of Health and Human Services, Atlanta, GA, USA, October 1992, 56 pp., no charge

Although this booklet in the series was oriented primarily to primary care providers' knowledge of hazardous substances in the environment, it is significant to