

- Subsurface properties and remediation;
- Environmental site assessments;
- Isolation of the contaminant plume;
- Extraction processes;
- Solidification/stabilization;
- Soil vapor extraction;
- Microbial remediation;
- Green remediation;
- Innovative technologies.

Most chapters contain a descriptive case study that illustrates the technology topic of the chapter. The final chapter, “Innovative Technologies”, discusses, albeit briefly, new, promising cleanup methods including:

- Electrokinetic remediation (unfortunately, Pichtel did not reference the special issue of the *Journal of Hazardous Materials* devoted to this topic);
- Reactive metallic walls;
- In situ vitrification;
- Plasma centrifugal furnace;
- Pneumatic fracturing and hot gas injection;
- Low temperature thermal aeration;
- Evaporation–catalytic oxidation;
- AquaDetox/SVE.

An appendix “Cost Analysis of Remediation Projects” is a brief description of selected remediation projects in tabular form. Although interesting, I wonder how useful such data are since the project descriptions are so short.

As I read the book I attempted to do so from two very different perspectives; first I tried to assume the role of a remediation engineer and second as a professor. In the first case, I found this book too general and lacking in the depth of topic treatment I would like as a consultant. Most remediation specialists are knowledgeable well beyond the material Pichtel provides. But this was not my opinion as a professor. I think this would be an excellent text, especially if supplemented with problems/exercises. I urge the author to consider the other (university) audience seriously and author a revised edition.

Gary F. Bennett

PII: S0304-3894(01)00187-X

**Toxicology testing handbook: principles, applications, and data interpretation**

David Jacobson-Kram and Kit A. Keller (Eds.), Marcel Dekker, New York, NY, 2000, US\$ 165.00, 448 pp., ISBN 0-8247-0073-2

According to the editors, this text:

- provides practical guidance to persons responsible for developing toxicology data, evaluating results from toxicology studies, and performing risk assessments;
- serves as a guide for proper study design to help ensure regulatory acceptance;

- addresses such issues as species selection, dose level and dosing regimen, animal number, routes of exposure, and proper statistical evaluation;
- presents insights into future directions in the field of toxicology and how new techniques in molecular biology, such as the use of transgenic animals, will impact the practice of this discipline.

The book has the following 13 chapters contributed by 18 writers in addition to the editors themselves:

- use of laboratory animals in toxicology studies;
- toxicity associated with single chemical exposures;
- multidose toxicity and carcinogenicity studies;
- metabolism and toxicokinetics;
- inhalation toxicity studies;
- genetic toxicology;
- developmental and reproductive toxicology;
- neurotoxicology;
- toxicological assessment of the immune system;
- toxicological pathology assessment;
- assessment of laboratories for good laboratory practice compliance;
- use of transgenic animals for the assessment of mutation and cancer;
- health risk assessment of environmental agents: incorporation of emerging scientific information.

As a chemical engineer involved, obviously, with chemicals and the safe use thereof, chemical effects/toxicology/safety/chemical testing is of interest. This book appears to address all aspects of that concern. Unfortunately, I must admit my obvious inability (background) to allow me to critically review what is written.

Gary F. Bennett

PII: S0304-3894(01)00191-1

### **Introduction to Risk Analysis**

Daniel M. Byrd and C. Richard Cothorn (Eds.), Government Institutes, Rockville, MD, 2000, US\$ 99.00, 453 pp., ISBN 0-86587-696-7

Risk analysis is a controversial subject. So begins this book. But it is a very important topic because of its universality: all activities and processes have risks. Thus, the authors state "risk analysis is ubiquitous", being "an activity that is pervasive at an informal level being inherently a part of everyday decision making".

Moreover, risk analysis plays an important role in developing the policy and regulation of the US Environmental Protection Agency, Occupational Safety and Health Administration, Department of Agriculture, Department of Transportation, Food and Drug Administration, Nuclear Regulatory Commission and State Environmental Agencies.

The first chapter sets the stage for the book by defining terms and describing the background (controversial as it is) surrounding risk analysis. The authors even say that experts