



Book reviews

Endocrine Disrupters in Wastewater and Sludge Treatment Processes

James W. Birkett, John N. Lester (Eds.), Lewis Publishers, Boca Raton, FL, 2003, US\$ 99.95, 304 pp., ISBN 1-56670-601-7

Many years ago, while participating in a water reuse working group, I asked a physician whether residues from birth control pills could end up in water that was to be reused. I was told that would not happen. Now, over 30 years later, I received this book dealing with Endocrine Disrupting Chemicals (EDCs) “that have been shown to produce changes in the endocrine system of organisms that leads to increases in cancers and abnormalities in reproductive structure and function. Recent research has highlighted the existence of hormonally active compounds in sewage and industrial effluents and their potential for recycling back into the environment—including drinking water supplies—through point and non-point sources.”

This book “presents the latest research on the sources, fate, and transport of EDCs in sewage and industrial effluents, as well as sludge treatment and disposal options, etc. In addition, the authors review current legislation, future research needs, and potential management strategies for endocrine disrupters in the environment.”

The number of chemicals of concern is large with the species ranging from those commonly known (PCPs, DDT, and DES, the latter being a synthetic steroid estrogen) to those chemicals less known by this reviewer, at least.

“Despite early evidence, the phenomenon of endocrine disruption has only become an overtly topical environmental issue since the early 1990s. The reason it came to the fore was that studies have revealed potential problems with human male reproductive health, in the form of reduced sperm quality/counts as well as worldwide increases in testicular cancer with EDCs cited as a popular cause. Evidence was also emerging that certain wildlife were experiencing endocrine disruption to their reproductive systems with exposure to environmental pollutants cited as the cause. . . . The link to pollution was also thought to be a possible cause of the effects seen in the human reproductive system, although it has not been fully resolved as to whether ED is actually occurring in the human population.”

The topic of endocrine disruption is covered in eight well-written and exceedingly well-referenced chapters (by my count, the book contains 1175 references to the scientific literature). The chapters by title are:

1. Scope of the problem;
2. Sources of endocrine disrupters;
3. Methods for the determination of endocrine disrupters;
4. Fate and behavior of endocrine disrupters in wastewater-treatment processes;

5. Fate and behavior of endocrine disrupters in sludge treatment and disposal;
6. Endocrine disrupters in receiving waters;
7. Endocrine disrupters in drinking water and water reuse;
8. Management strategies for endocrine disrupters in the aquatic environment.

The topic of the book, Pollution by endocrine disrupters, is one potential water pollution problem that I have never before considered (in my sheltered world of industrial pollution control). This book has opened my eyes to a whole new area of concern for the potential impact of synthetic chemicals on the environment and human health. As I said, the book is well-written and -referenced. I predict it will have an impact on the water pollution control field.

Gary F. Bennett

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Hazardous Materials Chemistry for Emergency Responders, 2nd edition

Robert Burke, Lewis Publishers, Boca Raton, FL, 2003, \$99.95(US), 466 pp., ISBN: 1-56670-580-0

Emergency response personnel, especially firefighters, daily respond to incidents involving hazardous chemicals. Their safety is dependent on their knowledge and understanding of chemicals and chemistry. However, few line firefighters have taken college chemistry courses. This book addresses that lack of knowledge.

Burke, an instructor in hazardous materials and columnist for fire-oriented magazines, has done an excellent job of presenting “chemistry” in a readable and understandable fashion. Mastery of the material he presents would be invaluable for first responders, especially the officer in charge of a hazardous material incident.

The introduction logically sets out the problem of hazardous material spills. Burke describes the large number of chemicals used in daily commerce; he cites 63,000 chemicals used outside the laboratory environment with the number increasing every year. He also notes that the Department of Transport (US DOT) regulates over 3800 hazardous materials in transportation. Over 6000 transportation accidents involving toxic chemicals were reported in the United States during the statistical period from 1996 to 2000. These accidents resulted in more than 50 deaths, 100 of injuries and 1000 of persons evacuated from their homes or sheltered in place. Also discussed in this beginning chapter is the US DOT Hazard Classification of Chemicals. This initial material is followed by a discussion of the NFPA 704 Marking System, i.e. the diamond. The final segment of this chapter is a discussion of the competencies required by both OSHA 1910.120 and NFPA 472. These capabilities define the level of training needed for the operations level, technician level and incident commander.

In Chapter 2, Burke discusses “The Basics of Chemistry”. He begins, logically, with the Periodic Table. Next, he lists the 39 HazMat Elements. For each of them, he describes the history, sources, important compounds, uses and isotopes. Additionally, he gives their symbol, atomic weight, DOT class, four-digit number, placard symbol, physical state and NFPA diamond data.