tion as particularly risky; many comic-book characters suffer deleterious effects, a clear message to young readers.

The authors have tried to make the contents more understandable by including a chapter on basic units and concepts. The chapter tries to cover too much ground though, and is not really needed by the rest of the book; a glossary would have sufficed.

The bulk of the book is in three sections, "Health Effects of Radiation. Effects of Large Doses of Radiation," and "Environmental and Occupational Exposure."

Unusual, but actually quite useful, are two chapters in the first main section that emphasize the importance of setting up and maintaining the programs and registries that are the sources of data. R.L. Kathren's chapter, in particular, shows how valuable the transuranium registry is for gathering information on the health effects of the actinides. B.L. Cohen and F.T. Cross, in separate chapters, provide differing views on the risks to health from exposure to radon progeny. Cohen summarizes his epidemiological observations that led him to reject the models for radiation carcinogenesis espoused by national and international committees. Cross points to the inadequacies of human epidemiology to provide quantitative information to support the development of models of carcinogenesis and argues for the validity of animal studies. In particular, he shows that such studies demonstrate the importance of exposure rate and the time sequence of exposures.

The second main section contains an excellent set of reviews. That on genetic effects by J.V. Neel is particularly well presented and it, together with the account by W.J. Schull on the cancer risks among the Japanese A-bomb survivors, alone make obtaining the book worthwhile. Neel points out at the outset that he realizes the readership will not be primarily biological and therefore promises to avoid abstruse genetic terminology where possible. This he achieves; the chapter is very readable. His conclusion is that the genetic effects of radiation are substantially less than currently projected. He says that "this does not mean that we should stop worrying, but only that we should worry less." In this reviewer's view, this is the essential message intended by the editors. Schull's chapter is as succinct (12 pages) a review of the information from the bomb survivors as one can find. Also in this section is a review by F.A. Mettler and J.E. Briggs of the findings of the study carried out in the villages around Chernobyl in which the health of the people in heavily contaminated zones were compared with that of people in lightly contaminated zones. The findings—essentially no differences—will likely surprise many readers.

A.F. Stehney's chapter on the health studies of the radium dial painters provides an authoritative and well-referenced review of the story of this group of women who were employed as early as 1913. The author shows that the 1941 recommended "tolerance dose" of 0.1 μg of radium still retains credibility 50 years later. Also of interest is that no bone sarcomas or head carcinomas have been diagnosed in women who started painting after 1925, when practices such as tipping radium-laden brushes with the lips were prohibited.

The third group concerning environmental and occupational exposures contains a detailed summary by Lixun Wei of several large-scale investigations in China on the long-term mortality in high radiation background areas. No significant increase in the radiogenic cancers were detected in the high (three times normal) background area, even with the 1 million person-years of exposure. The final review is by S.A. Fry and her many associates on the health and mortality among contractor employees in U.S. Department of Energy facilities. This is notable for the absence of any consistent pattern of increases in mortality from specific cancers. The authors conclude that the studies of the approximately 360,000 employees provide little evidence that workers' exposure to radiation on the job has significantly increased their risk of dying from cancer.

In summary, this latest addition to the Advances in Chemistry Series presents the reader with a fair overview of the current basis for our estimates of the risks from radiation and helps to correct popular misperceptions without exaggeration. —R.V. OSBORNE, Health and Environmental Sciences Division, AECL, Chalk River Laboratories, Chalk River, ON KOJ 1JO, Canada (osborner@crl.aecl.ca).


Weed science is a young but dynamic field of study. In recent years, increased research efforts have focused on understanding weed-crop interactions and developing integrated weed control strategies not solely dependent upon herbicides. Because of public concern or economic factors, many herbicide registrations have been lost, and new safer weed control products are now being introduced to the market. Other developments, including food safety, groundwater quality, the exponential increase in herbicide-resistant weeds, and the use of herbicide-resistant crops have become important topics to weed scientists and growers. Consequently, general weed science textbooks soon become outdated.

This hardcover book is the third edition of a popular and widely used classroom textbook. The author has incorporated numerous changes from the previous edition. For example, less detailed information is provided on soil properties, chemical retention in soils, herbicide metabolism in plants, and general biology and physiology of plants. In addition, the study questions were eliminated at the end of each chapter. Major additions to this edition, however, include a chapter on weed resistance and transgenic crop tolerance to herbicides, conservation tillage practices, and general reviews of weed control strategies in noncrop and several cropping systems. New weed control techniques have been added, such as the use of mycoherbicides, and many cultural control methods, as well as a discussion of various regulatory aspects. Although the discussion of herbicide interactions, absorption, translocation, and mechanism of action have been updated, they are not covered in great detail and only provide a general understanding of the processes involved.

Like other weed science texts, including the previous edition, this book focuses primarily on herbicides. At least three-quarters of the text discusses some aspect of herbicide use or activity. Nevertheless, it will continue to serve as an excellent text for introductory undergraduate courses in weed science and as a general reference to others interested in weed science. —JOSEPH M. DI TOMASO, Department of Vegetable Crops, University of California, Davis, CA 95616 (ditomaso@vegmail.ucdavis.edu).

Soil Ecology


This is a short review of a short text. This work is advertised as an "exciting new textbook for all concerned with the environ-