

now have similar or even more significant "right-to-know" laws, and more are expected shortly.

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The Investigation and Control of Gas Explosions in Buildings and Heating Plant, by R.J. Harris, British Gas, Chapman and Hall, Methuen (attention Valerie Berk), 29 West 35th St., New York, NY 10001, 1983, cloth, 194 pages, \$41.00.

This book is a practical, yet technically advanced, treatment of the gas explosions which occasionally occur and are frequently misdiagnosed. The author is principal scientist with the British Gas Midlands Research Station, and has assembled the accumulated wisdom and data from a variety of sources. Most of the data are for natural gas (essentially methane), although other gases and vapors are considered in the introductory section.

Beginning with an introduction to combustion and explosions, subsequent chapters deal with gas accumulation, mixing, and ventilation, with the generation of pressure in confined gas explosions, with the prediction of pressures generated in vented confined gas explosions, with the design of explosion relief panels and their practical application, and with investigation of gas explosion incidents. (This reviewer investigated a very similar explosion to the one detailed some years ago, where a broken gas pipe outside the house had allowed gas to accumulate in a house which did not have gas service.) In the appendices, the author has included calculation of gas flow rates from a broken pipe, derivation of the pressure-time relationship at the onset of a confined gas explosion, a mathematical model of a vented gas explosion, worked examples in the application of empirical equations to the design of explosion relief panels, and investigation of an accidental gas explosion. Excellent color photographs, and 104 references enhance the appeal of the book to a serious reader. Every building engineer who supervises gas furnaces or dryers, and every technical gas utility manager would find the book of real value. It is highly recommended.

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Superacids, by G.A. Olah, G.K.S. Prakash and J. Sommer, Wiley/Interscience, New York, 1985, 371 pages, \$57.95.

Superacids are acid systems stronger than conventional strong Brønsted acids (such as sulfuric acid) or Lewis acids (such as aluminum chloride). The discovery of "Magic Acid", fluoroantimonic acid in the 1960s led to development of a series of mixtures whose strength, when measured by the

activity of the proton $a + H$ is much greater than the strong mineral acids. The familiar pH scale is no longer useful in such evaluations; instead, a scale of H_0 is used with $H_0 = -12$ as a lower limit for identification as a super acid. Starting with a strong acid (such as sulfuric acid, $H_0 = -10$), by adding to it a stronger acid to increase the ionization, H_0 's up to -27 for 90% SbF_5 in HSO_3F may be achieved.

Following a discussion of the experimental techniques for acidity measurements of the protic acids, and experimental techniques applied to solid acids, the book discusses Brønsted superacids (such as $HClO_4$, $ClSO_3H$, HSO_3F and CF_3SO_3H), the perfluoroalkanesulfonic acids, the Lewis superacids (such as SbF_5 , AsF_5 , TaF_5 and NbF_5 , conjugate Brønsted—Lewis superacids (including "Magic Acid", and other fluoroantimonic acids), and solid superacids (mixed oxides or chalcides as well as carbocations (trivalent and higher coordinate cations).

Heterocations in superacids are discussed in detail including onium ions, sulfonium ions, and ions containing Se and Te halonium ions, azonium ions, nitronium ions, nitrosonium ions, enium ions (nitrenium ions, borenium ions, oxenium ions, phosphonium ions, silicinium ions), homo- and heteropolycations, interhalogen cations, polyatomic cations of Group VI elements (incl. O, S, Se, Te), polyheteroatomic cations, and miscellaneous cations. Included in the latter are cations containing H, Xe, and Kr.

Superacid catalyzed reactions (as used in conversion of saturated hydrocarbons, including the alkylation of aromatic hydrocarbons and halogenation, polymerization and phenol—dienone rearrangements) are covered in detail. The book has extensive references. Except for the notations on the instability of concentrated perchloric acid and perchlorates, little attention is given to the stability and potential handling and environmental aspects of disposal; in a second edition "safety and environmental" considerations would be useful.

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Toxic Susceptibility: Male/Female Differences, by Edward J. Calabrese, Wiley/Interscience, New York, 1985, 336 pages, \$59.95.

While it has been suspected by some that exposures to chemicals, drugs, and other "agents" may have different effects on males as compared to females, this area of biology has not previously been well reviewed. This book, written by a member of the Division of Public Health, University of Massachusetts, is a critical assessment of the biomedical/toxicological literature concerning the occurrence and causes of sex differences in response to toxic agents in animals and humans. The number of toxic substances for which sex-related differences have been found to occur approach 200;