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**BOOK REVIEW**

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# Review of: *Handbook of Chemical and Biological Warfare Agents, Second Edition*

**REFERENCE: Ellison DH. Handbook of chemical and biological warfare agents, 2nd edn. Boca Raton, FL: CRC Press, 2008, 762 pp.**

Ellison's second edition handbook is an excellent reference text for those who are interested in chemical and biological warfare agents, as well as forensic scientists who might encounter them in clandestine laboratories. The author provides an exhaustive list of actual and potential agents, while classifying them according to type, structure, and mode of action. When first published, there were few sources of information available to first responders on chemical and biological agents, and the author's text made broad use of the Emergency Response Guidebook (ERG).[1] The second edition still provides ERG numbers, but now covers in much greater depth the agents, their chemical structure, and their mode of action.

The book is separated into six sections and a total of 21 chapters. The sections include Nerve Agents (I), Vesicant/Urticant Agents (II), Toxic Agents (III), Incapacitation and Riot Control Agents (IV), Biological Agents (V), and Additional Information (VI). Each section devoted to these broad topics contains chapters focused on specific agent types with detailed information in the toxicology, characteristics, additional hazards, protection, medical, fatality management, and references. Following each discussion, a list of agents, components, precursors, and decomposition products is listed for the particular class of materials, all of which will be beneficial to the reader.

Ellison has done a service to readers in organizing the materials and identifying them by a handbook number that indicate their class (e.g., C01) in the text and the number following the hyphen indicating whether they are an agent (e.g., C##-A##), component or precursor (e.g. C##-C##), or decomposition product (C##-D##). There is a minor error in the first chapter on nerve agents where he neglected to change the numbering between agents C01-A046 to C01-A072, which are appropriately numbered C01-C046 to C01-C072. Another minor frustration was encountered in the text with regard to proper spelling of chemical names related to phosphorus. For example, phosphorus pentachloride and phosphorus oxychloride were incorrectly referenced as "phosphorous," and that particular spelling only refers to the +3 valence state of the element. The Index of the text contains both iterations of these compounds, and the presence of commonly misspelled chemical names in the Index section is valuable as it may assist the user in locating the referenced chemical even when given incorrect information. However, it should refer to the proper spelling in the body of the handbook. The error was especially disappointing in light of Ellison's strong background in chemistry.

While the author provides information on recommended personal protective equipment, firefighting measures, and other first responder issues, it is recommended that this text be used as a secondary reference and that appropriate experts in the medical and hazardous materials response fields be consulted due to the myriad of complexities involved in hazardous materials response. With that said, I have found the first edition of this text very useful in informing the aforementioned decisions, and this text is a significant improvement to the first edition.

Biological agent chapters are arranged by general information and response. The explanatory notes are excellent in regard to the chemical information, but the author would have done well to provide an explanation of "infectious dose" as it relates to biological pathogens, especially as there is much controversy in its derivation. Ellison also provides some information in quotes throughout the book, but doesn't specifically reference the source of the quote.

The final section of the book, Additional Information (VI), is an impressive reference tool. Ellison has listed the agent by chemical name, CAS number, or synonym and cross-referenced the location where information can be found related to the compound in the text. This compilation of information will be very useful to the reader and is an exceptional achievement.

Overall, I believe forensic chemists and biologists will find Ellison's handbook to be precisely what he intends: A useful reference work, with comprehensive presentations of key data on each entry, including toxicity. I recommend this book as an excellent reference text in the area of chemical and biological agents.

## Reference

1 Transport Canada, United States Department of Transportation, Secretariat of Transport and Communications of Mexico. 2004 emergency response guidebook. Wisconsin: J.J. Keller and Associates, 2004.