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Book Review

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Waterborne Pathogens: Detection Methods and Applications. Edited by Helen Bridle (Pp. 387; €108; ISBN: 978-0-444-59543-0). Academic Press, Elsevier. 2013.

As noted in the introductory chapter to this ambitious book, contaminated drinking water is one of the most significant environmental contributors to the human disease burden. Thus detection of pathogens in water supplies is of importance to public health, and it is not difficult to see the slot into which a book with this title might usefully fit.

Dr Bridle's work is a brave effort to fill this slot – she is sole or first author of nine of 12 chapters in the book. Although it is clear that Dr Bridle is a highly motivated author, it is also clear that in attempting to cover such a broad topic, including more authors with greater expertise in the various fields and pathogens would likely have produced a more useful and competent product. This would not only have resulted in a more authoritative book, but would also probably have meant that several of the scientific errors that occur throughout some chapters would have been avoided. For example, the sentence '*Cyclospora* can be recovered with the methods used for *Cryptosporidium*' that follows on from a description of recovering *Cryptosporidium* using the standard methods of filtration, elution, immunomagnetic separation and fluorescence microscopy, is, at best, highly misleading; there is no immunomagnetic separation tool currently available for *Cyclospora*. Furthermore, some irritating small errors regarding references (references not listed, or wrong references listed) may have been spotted and corrected if more authors had been involved.

The main focus of this book is, as is acknowledged in the Introduction and repeated in different chapters, alternative, developing and emerging technologies for detection. It would probably have been wiser to make this clear in the book title, as the current title implies a different sort of book. Although chapters on the different waterborne pathogens, existing methods, and sample processing are provided as background, the usefulness and accuracy of these contextual chapters is not always satisfactory. For example, the lack of mention of ISO Method 15 553 is a serious flaw.

The main strength of the book lies in the section (chapters 5–10), in which various developing detection technologies are described. Again, however, coverage is patchy. Although some sections are very well written with the fundamentals of methods clearly described, researchers with an in-depth knowledge of a particular pathogen may find other sections irritating due to sweeping statements or obvious lack of knowledge. Another problem is an absence of proper critical review: few of the chapters are as clear on the disadvantages or difficulties associated with the methods described as they are on the advantages. For example, it should be spelled out more clearly that methods with high limits of detection are currently unsuitable for use outside the research laboratory.

This question of determining when a method actually becomes of applied utility is partially addressed in the book's final chapter. Here, a market-oriented perspective on the alternative technologies described in the main section of the book is provided, although the UK-centric angle may put off some readers. Nevertheless, this chapter is important as it makes clear, as the preceding chapters have often failed to do, that unless the new technologies are able to operate in real-life situations, they are of little practical value to the water industry. A technology that can only process 20 ml samples is of little applied use, as is a technology that has only been proven effective on laboratory-grade water, or has a detection limit that is far too high. In addition, the authors of this chapter make clear that in terms of pathogen monitoring in water, the obstacles of regulatory compliance and validation must also be overcome.

In conclusion, this book is an interesting overview of alternative potential detection technologies for waterborne pathogens and the idea of combining a range of diverse waterborne pathogens into a single book is commendable. However, the book title is misleading, and due to the breadth of the remit not being covered by the narrow spectrum of authorship, more useful, accurate, and balanced information would probably be obtained, and at a fraction of the cost, from a judicious selection of review articles written by researchers with in-depth knowledge.

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