



Field Guide to Environmental Engineering for Development Workers: Water, Sanitation, and Indoor Air

By James R. Mihelcic, Lauren M. Fry, Elizabeth A. Myre, Linda D. Phillips, Brian D. Barkdoll

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Throughout the world, and even in the United States, engineers are tackling the challenges of sustainable development and public health - challenges that engineers are uniquely qualified to address. Yet engineers working abroad on development projects often lack the knowledge and information to design, plan, construct, operate, and maintain technology that is culturally, economically, and geographically appropriate - technology that takes into account gender, does not use significant amounts of fossil fuels, accounts for environmental conditions like water scarcity, and uses local construction materials. This readable and fully illustrated guide is a complete handbook for international engineering service projects that involve water supply and treatment, watersheds, sanitation systems, and indoor air quality. It provides the tools necessary to implement the right technology in developing regions around the world. The authors introduce sustainable engineering and explain how environmental engineering fosters public health, with an emphasis on the relationship between community participation and the success of an engineering project. In addition, this book covers topographical surveying, project planning, watershed management, and construction materials and techniques. Specific technical guidance is offered for the design and construction of multiple systems for water supply, water and wastewater treatment, and flood storage and drainage, as well as solid waste management and indoor air quality improvement. This book is a valuable resource for engineering students, faculty, and practitioners involved with programs like Engineers without Borders, Water for People, and Engineers for a Sustainable World, as well as those affiliated with government groups, international agencies, and charitable organizations.

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Bibliography

- Sales Rank: #162790 in Books
- Brand: Brand: American Society of Civil Engineers
- Published on: 2009-07-01
- Original language: English
- Number of items: 1
- Dimensions: 9.25" h x 6.25" w x 1.25" l, 1.70 pounds
- Binding: Paperback
- 512 pages

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Editorial Review

Review

Book titles occasionally include the term field guide in a euphemistic sense, and such works very rarely are actually used in the trenches. With *Field Guide to Environmental Engineering for Development Workers*, however, a more literal take is in order. Indeed, on the inside front cover the reader will find a checklist of steps to be taken to avoid diarrhea. With a large team of authors and contributors, most of whom spent time in the Peace Corps, this book is nothing less than a how-to guide for applying engineering know-how to help people in the developing world gain access to clean water and achieve higher standards of sanitation. A foreword by the former U.S. president Jimmy Carter, our volunteer in chief, underlines the importance of the mission at hand. The guide is densely packed with straightforward, practical black-and-white illustrations and sketches, many of them showing the construction and operation of various facets of infrastructure that we in the developed world tend to take for granted. Proper construction of pipeline crossings, assessing the status of a wastewater lagoon by interpreting the color of its water, and understanding how to increase the capacity of a gravity-fed water system are among the many topics covered in this work. *Field Guide* is meant to be, as much as possible, accessible to those who are not engineers but want to do their part in helping people who are less fortunate. Engineers may not be impressed by the sophistication of the technology described, but they are sure to be sobered by the realization that the basic needs of so many millions of people around the world are not being met. And those working to meet those needs will simply find it a godsend. --This review appeared in the December 2009 (vol.79, issue 12) of *Civil Engineering*. Copyright 2009 by the American Society of Civil Engineers.

About the Author

James R. Mihelcic, Ph.D., BCEEM, is a professor of civil and environmental engineering, a state of Florida 21st Century World Class Scholar, and director of the Master's International Program in Civil and Environmental Engineering at the University of South Florida. Lauren M. Fry is a doctoral candidate in environmental engineering at Michigan Technological University. Elizabeth A. Myre has managed water, sanitation, and renewable energy projects with NGOs in Haiti and Guatemala. Linda D. Phillips, P.E., P.M.P., C.D.T., is a lecturer and Patel Associate in the Department of Civil and Environmental Engineering and director of the International Capstone Design (ICD) program at the University of South Florida. Brian Barkdoll, Ph.D., P.E., D.WRE, F.ASCE is an associate professor of civil and environmental engineering at Michigan Technological University.

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