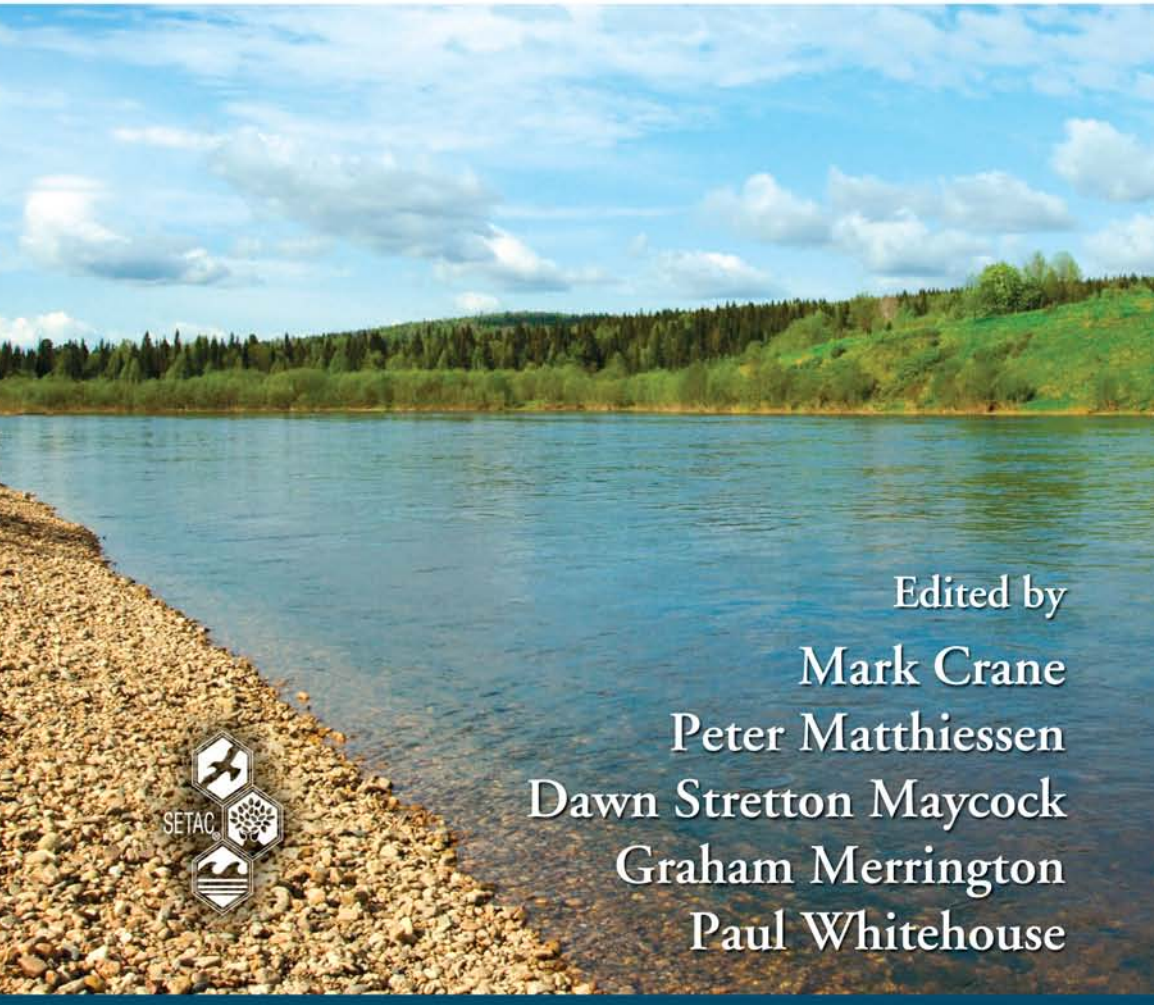
Derivation and Use of Environmental Quality and Human Health Standards for Chemical Substances in Water and Soil



Edited by
Mark Crane
Peter Matthiessen
Dawn Stretton Maycock
Graham Merrington
Paul Whitehouse

Derivation and Use of Environmental Quality and Human Health Standards for Chemical Substances in Water and Soil

Other Titles from the Society of Environmental Toxicology and Chemistry (SETAC)

Veterinary Medicines in the Environment
Crane, Boxall, Barrett
2008

Relevance of Ambient Water Quality Criteria for Ephemeral and Effluent-dependent Watercourses of the Arid Western United States
Gensemer, Meyerhof, Ramage, Curley
2008

Extrapolation Practice for Ecotoxicological Effect Characterization of Chemicals
Solomon, Brock, de Zwart, Dyev, Posthumm, Richards, editors
2008

Environmental Life Cycle Costing
Hunkeler, Lichtenvort, Rebitzer, editors
2008

Valuation of Ecological Resources: Integration of Ecology and Socioeconomics in Environmental Decision Making
Stahl, Kapustka, Munns, Bruins, editors
2007

Genomics in Regulatory Ecotoxicology: Applications and Challenges
Ankley, Miracle, Perkins, Daston, editors
2007

Population-Level Ecological Risk Assessment
Barnthouse, Munns, Sorensen, editors
2007

Effects of Water Chemistry on Bioavailability and Toxicity of Waterborne Cadmium, Copper, Nickel, Lead, and Zinc on Freshwater Organisms
Meyer, Clearwater, Doser, Rogaczewski, Hansen
2007

Ecosystem Responses to Mercury Contamination: Indicators of Change
Harris, Krabbenhoft, Mason, Murray, Reash, Saltman, editors
2007

For information about SETAC publications, including SETAC's international journals, Environmental Toxicology and Chemistry and Integrated Environmental Assessment and Management, contact the SETAC Administratice Office nearest you:

SETAC Office
1010 North 12th Avenue
Pensacola, FL 32501-3367 USA
T 850 469 1500 F 850 469 9778
E setac@setac.org

SETAC Office
Avenue de la Toison d'Or 67
B-1060 Brussells, Belguim
T 32 2 772 72 81 F 32 2 770 53 86
E setac@setaceu.org

www.setac.org

Environmental Quality Through Science®

Derivation and Use of Environmental Quality and Human Health Standards for Chemical Substances in Water and Soil

Edited by
Mark Crane
Peter Matthiessen
Dawn Stretton Maycock
Graham Merrington
Paul Whitehouse

SETAC Technical Workshop
Faringdon, Oxfordshire, United Kingdom

Coordinating Editor of SETAC Books
Joseph W. Gorsuch
Gorsuch Environmental Management Services, Inc.
Webster, New York, USA

CRC Press
Taylor & Francis Group
Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an **informa** business

Published in collaboration with the Society of Environmental Toxicology and Chemistry (SETAC)
1010 North 12th Avenue, Pensacola, Florida 32501
Telephone: (850) 469-1500 ; Fax: (850) 469-9778; Email: setac@setac.org
Web site: www.setac.org

Printed in the United States of America on acid-free paper
10 9 8 7 6 5 4 3 2 1

International Standard Book Number: 978-1-4398-0344-8 (Hardback)

Library of Congress Cataloging-in-Publication Data

Derivation and use of environmental quality and human health standards
for chemical substances in water and soil / editors, Mark Crane ... et al.
p. cm.
"A CRC title."
Includes bibliographical references and index.
ISBN 978-1-4398-0344-8 (hardcover : alk. paper)
1. Water quality--Standards. 2. Soils--Quality--Standards. 3. Environmental toxicology--Measurement. 4. Water quality biological assessment. 5. Soils--Quality--Measurement. 6. Public health. I. Crane, Mark, 1962- II. Title.

TD370.D47 2010
363.6'1--dc22 2009032733

SETAC Publications

Books published by the Society of Environmental Toxicology and Chemistry (SETAC) provide in-depth reviews and critical appraisals on scientific subjects relevant to understanding the impacts of chemicals and technology on the environment. The books explore topics reviewed and recommended by the Publications Advisory Council and approved by the SETAC North America, Latin America, or Asia/Pacific Board of Directors; the SETAC Europe Council; or the SETAC World Council for their importance, timeliness, and contribution to multidisciplinary approaches to solving environmental problems. The diversity and breadth of subjects covered in the series reflect the wide range of disciplines encompassed by environmental toxicology, environmental chemistry, hazard and risk assessment, and life-cycle assessment. SETAC books attempt to present the reader with authoritative coverage of the literature, as well as paradigms, methodologies, and controversies; research needs; and new developments specific to the featured topics. The books are generally peer reviewed for SETAC by acknowledged experts.

SETAC publications, which include Technical Issue Papers (TIPs), workshop summaries, a newsletter (*SETAC Globe*), and journals (*Environmental Toxicology and Chemistry* and *Integrated Environmental Assessment and Management*), are useful to environmental scientists in research, research management, chemical manufacturing and regulation, risk assessment, and education, as well as to students considering or preparing for careers in these areas. The publications provide information for keeping abreast of recent developments in familiar subject areas and for rapid introduction to principles and approaches in new subject areas.

SETAC recognizes and thanks the past coordinating editors of SETAC books:

A.S. Green, International Zinc Association,
Durham, North Carolina, USA

C.G. Ingersoll, Columbia Environmental Research Center,
US Geological Survey, Columbia, Missouri, USA

T.W. La Point, Institute of Applied Sciences,
University of North Texas, Denton, Texas, USA

B.T. Walton, US Environmental Protection Agency,
Research Triangle Park, North Carolina, USA

C.H. Ward, Department of Environmental Sciences and Engineering,
Rice University, Houston, Texas, USA

Contents

List of Figures

List of Tables