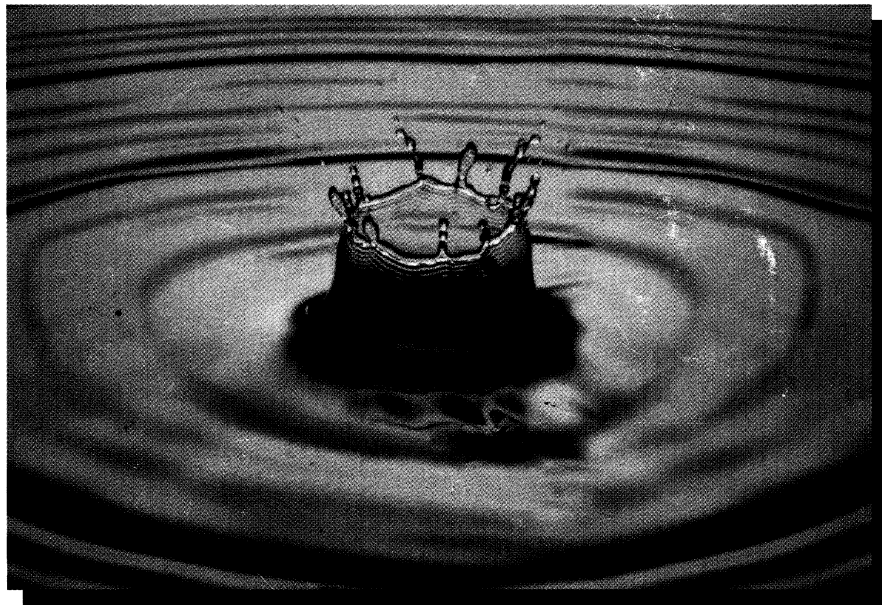


# WATER CHEMISTRY AND DISINFECTION:

*Swimming Pools & Spas*



Edited by:

RAY DENKEWICZ, JR.  
CHARLES P. GERBA  
QUE HALES

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**Water Chemistry  
and Disinfection:  
Swimming Pools and Spas  
*A Technical Symposium***

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**Symposium Series  
Volume 1**

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Publishing Editor: J. Que Hales – Journal of the Swimming Pool and Spa Industry / Pool Chlor  
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# Preface

This volume contains the proceedings of the technical symposium entitled *Water Chemistry and Disinfection: Swimming Pools and Spas* which was held on November 21, 1996 in Phoenix, Arizona. This symposium, which was sponsored by NSPI and several member companies, brought together nearly 200 individuals from government laboratories, universities, and industry with a diversity of backgrounds. As the symposium title suggests, the central theme of the symposium was to discuss the important area of swimming pool and spa water chemistry.

Although much valuable, technical information has been previously published in scientific journals on many of the subjects covered in this proceedings, the organizers felt a deeper commitment to creating a contemporary forum for the cross fertilization of technological ideas between the industry's leading scientific researchers and pool and spa trade professionals. This volume is a result of that effort.

A total of 18 papers were presented at the symposium. Fourteen of the presented papers appear here. All papers were subject to review by the Technical Editors after which authors had an opportunity to respond to the Editors comments. Because a primary goal of the Editors was reasonably rapid publication, the revised papers were accepted without further revision. Thus, the published papers reflect the views and standards of the authors and not necessarily those of the Editors.

R. Denkewicz, Jr.  
C. P. Gerba  
J. Q. Hales

# Forward

In 1996, NSPI through its interest in providing a forum for the exchange of ideas, information and experience among those with professional interest in the science and technology of swimming pools and spas, established a Symposium Series, to be held at its Annual Exposition. This year's symposium, suggested to us and organized by Ray Denkewicz, Dr. Charles Gerba, and J. Que Hales is the first in what we hope to be a continuing series of symposia serving to elevate the education, integrity and quality of our industry.

Bill Kent  
President, NSPI

Carvin DiGiovanni  
Technical Director, NSPI

# Acknowledgements

The organizers would like to extend their appreciation to the following sponsors who either donated their time and talents or provided direct financial contributions to make this symposium successful.

(In reverse alphabetical order)

Watkins Manufacturing  
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Amtrol

Special thanks to Pat Smith, Programs Coordinator at NSPI, who graciously accepted the responsibility of coordinating all the details that were associated with the planning and execution of the symposium including the printing of this book. Thanks also to Carvin DiGiovanni, Technical Director of the NSPI, who assisted as a moderator, introducing speakers and topics as well as making general remarks on behalf of the NSPI.

# **Order information for audio tapes of the presentations:**

**As part of the NSPI Educational Audio Cassette Program, all of the presentations made at the symposium were audio recorded. For information on availability and pricing of the set of four audiocassettes, please contact the National Spa and Pool Institute at:**

**National Spa and Pool Institute  
2111 Eisenhower Avenue,  
Alexandria, VA 22314-4698**

**Phone: 703-838-0083 ext. 124  
Fax: 703-549-0493**

**The catalog numbers for the four tapes covering the day-long symposium are 96NSPI-1A, 96NSPI-1B, 96NSPI-1C, and 96NSPI-1D.**

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# The Making of a Happy Pool

**Bill Kent**

***National President – NSPI***

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*An introductory address was presented by Bill Kent, the National President of the NSPI (1996). His address, entitled "The Making of a Happy Pool", was a light-hearted look at the pool and spa industry from his perspectives as both its president and a long-time owner/manager of an industry business.*

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**Note: This introductory address was made at the symposium. It was not, however, intended for publication in this volume. An audiocassette recording of the address is available. Please see page 6 for order information.**

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National Spa and Pool Institute - November 1996

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Proceedings – NSPI Chemistry Symposium (1996)