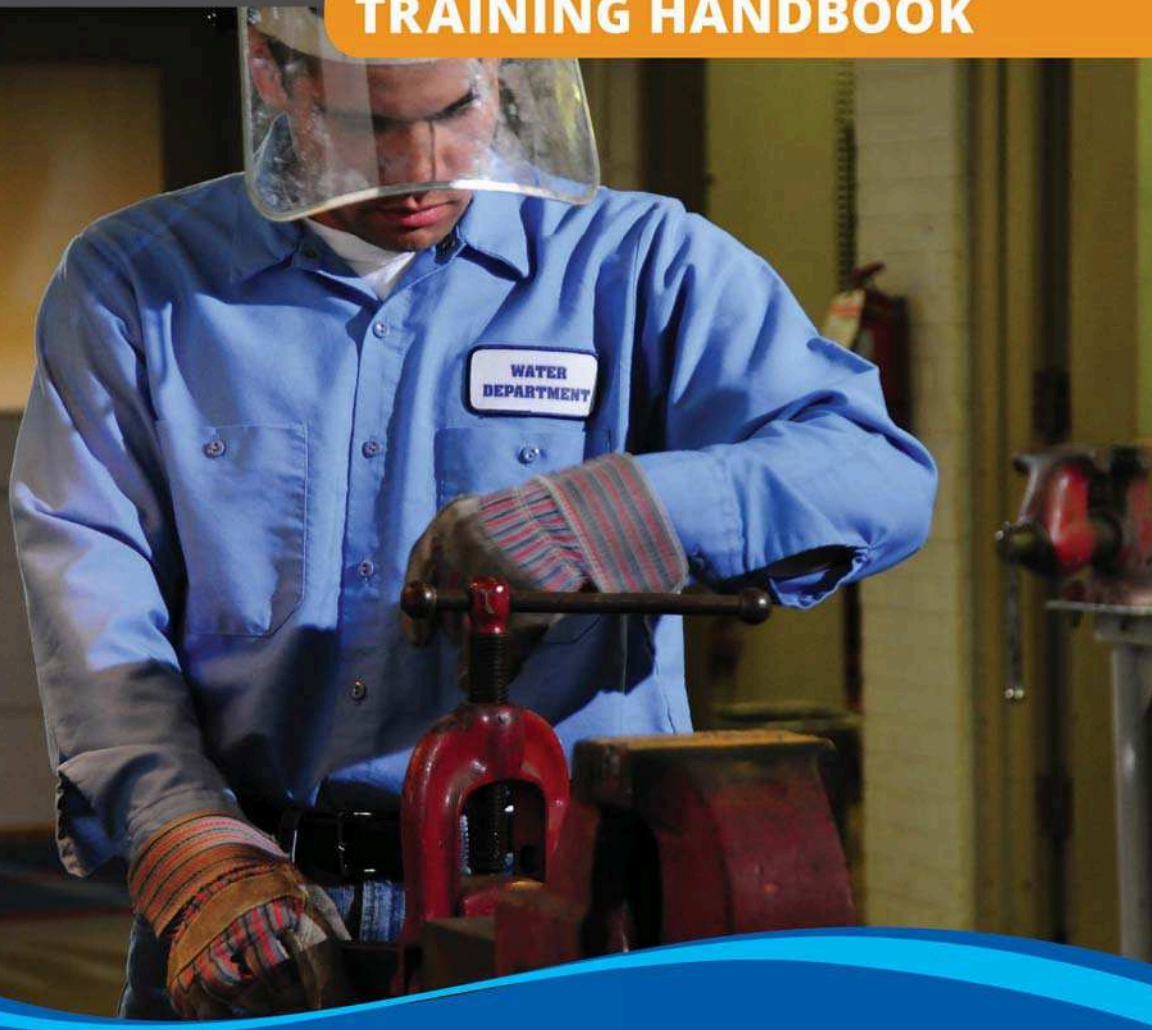
Water Treatment Operator

TRAINING HANDBOOK



Third Edition

Nicholas Pizzi and
William C. Lauer

American Water Works Association

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Contents

First Edition Preface

The people who operate water treatment plants make an important contribution to the public health of the community in which they work. A safe drinking water supply is essential to all representative groups within the sphere of influence of the treatment plant. Therefore, the water plant operator should be a trained professional who is capable of performing the tasks necessary to provide the safest possible water.

Trained professional: the phrase implies two principles. First, this is a person who conforms to technical and ethical standards of a discipline, perhaps on the level of a permanent career. Second, this person is trainable and has been trained to perform at a level that leads to professionalism. This book is written with those principles in mind.

An ethical paradigm is in action here. Performing the role of water plant operator places a premium on allegiance to the consumer, the regulator, and the employer. Often, operators believe the demands made on them by the three are in conflict. Many operator training programs are available to people in the field, but few of them offer training in ethics. Occasionally, we read about an operator who has made a questionable ethical choice. Public response to these incidents is a predictable loss of confidence in the drinking water industry. Usually, when operators make the right choice, it is a result of their training. Unfortunately, the right choices that operators make are not often written about.

The US Environmental Protection Agency (USEPA) has published guidelines for the certification and qualification of the men and women who operate the water treatment plants in this country.* These guidelines provide a legal framework for operator certification, one that underscores the opinions previously stated. To add weight to the seriousness of the rule, the USEPA administrator is directed to withhold 20 percent of the funds a state is otherwise entitled to receive in its Drinking Water State Revolving Fund capitalization grants under section 1452 of the Safe Drinking Water Act if the state does not meet goals or commitments. This action is an inducement to perform.

*Federal Register, USEPA, FRL-6230-8, Final Guidelines for the Certification and Recertification of the Operators of Community and Nontransient Noncommunity Public Water Systems, Feb. 5, 1999. p. 5916.

The rule requires, at a minimum, that all owners of public water supplies place the direct supervision of their water system under the responsible charge of an operator(s) holding a valid certification equal to or greater than the classification of the treatment facility. It further requires that all operating personnel making process-control decisions about water quality or quantity that affect public health be certified. Finally, it requires that a designated certified operator be available for each operating shift.

The rule is populated with many phrases that begin with "must": the state must classify water systems; operators must pass an exam; exam questions must be validated; operators must have a minimum level of schooling; licenses must be renewed; the state must establish training requirements; the state must include ongoing stakeholder involvement.

What drives this rule and its associated requirements? The recognition that the water treatment plant is a barrier against the passage of pathogen-infested or otherwise harmful water and that those who own and operate them should be accountable for the water they produce. The concept of the multiple-barrier approach to water plant operation has evolved from such recognition. Programs such as the Partnership for Safe Water and other efforts attempt to instill a systematic approach to this discipline and to encourage tenacity for ongoing process improvement through optimization. These programs provide a framework for operators who wish to improve their skills and knowledge of the profession.

It is hoped that this third edition will help operators in their search for professionalism.

I would like to thank the following water utility professionals who served as reviewers of this book. Their time is appreciated and their expertise acknowledged.

Christine A. Owen, PhD, Water Quality Assurance Officer, Tampa Bay Water, Clearwater, Fla.

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Jan C. Routt, BS Microbiology, Director of Water Quality, Kentucky-American Water Company, Lexington, Ky.

I would also like to thank the following individuals for their assistance in developing the outline for this book. Their contribution was thorough and helped to make this work a comprehensive tool for operators: David Talley, Bill Lauer, Joe McDonald, Nelson Yarlott, and Gay Porter De Nileon.

Nicholas G. Pizzi

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Third Edition Preface

Nick Pizzi is my friend and colleague. When AWWA asked me to consider authoring the third edition of this book, the first thing I did was to contact Nick. He explained that he had decided not to participate in the revision and that he was confident that I would provide professional and current information.

Even though I did not work with Nick on this new edition, his hand is evident throughout. Before making his decision not to do this revision, he had provided suggestions for updates and I have included them. Also, I did not tamper with Nick's style. His words reveal a passion for operations excellence that I can only hope to appreciate.

My approach was to update the many references and illustrations to make them current. I also reviewed the operator certification knowledge requirements included in the Associated Boards of Certification (ABC) Need-to-Know criteria. Several state certification boards' (e.g., California, Pennsylvania, and Texas) operator requirements were also added where there were differences. Any topics in these certification requirements that were not already included in the book were added.

The result of these additions and revisions make this book an indispensable reference for all water treatment plant operators and plant managers. The book is equally useful for certification exam studies and as a reference for operations personnel.

I want to thank David Plank, Melissa Valentine, and Alan Roberson at AWWA for their help and support during the publication process. Most of all I want to thank Nick Pizzi for his outstanding book, which I was allowed to supplement.

William C. Lauer