

How to Become a Certified Operator

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How to Register for the Exam

Visit ADEQ's [Operator Certification](#) page to register for an exam, information about the program, current fees, download forms, sign up for free trainings and workshops, and additional resources.

GateWay Community College and the City of Phoenix (COP) are ADEQ approved exam proctors. Decide which classification you are going to test in: Water Distribution, Water Treatment, Wastewater Collections, or Wastewater Treatment. After receiving a 70 percent or higher on your exam, you may then apply for an Operator Certificate. Once you receive your certificate, you must complete 30 or more Professional Development Hours (PDHs) every three years. Operators are responsible for keeping a complete record of PDHs, and must provide copies to ADEQ upon certificate renewals and/or upgrades.

Step 1: Decide which Operator Certification you will test for – Grade 1 exams require a high school diploma or GED. Contact ADEQ's Operator Certification Program for approval to skip one grade if you have less than one year with a previous grade.

Step 2: Visit [ADEQ Operator Certification](#) and select GateWay's or COP exam registration option for dates & locations.

Step 3: After passing your exam – Apply for your new or upgraded certificate with ADEQ. Visit the [Operator Certification Online Portal](#).

Information You Need to Know About the Exam

The exam creator is [Association of Board of Certification \(ABC\)](#). They have the **2017** need to know criteria for each classification/grade level of exam.

Visit www.abccert.org/testing_services/need_to_know_criteria.asp or click the classification/grade level below to print off the **2017** Need-to-Know Criteria.

Distribution Grade 1	Water Treatment Grade 1	Collection Grade 1	Wastewater Treatment Grade 1
Distribution Grade 2	Water Treatment Grade 2	Collection Grade 2	Wastewater Treatment Grade 2
Distribution Grade 3	Water Treatment Grade 3	Collection Grade 3	Wastewater Treatment Grade 3
Distribution Grade 4	Water Treatment Grade 4	Collection Grade 4	Wastewater Treatment Grade 4

Test Preparation Materials

Practice Exams:

Once you have studied thoroughly and want to test the waters before you pay for an actual exam, set up an appointment to take a practice exam. ADEQ keeps older editions of the certification exams, which can be used for practice. They are not a photocopy of the actual ABC exams but there are only so many ways to ask a pump or motor question.

To set up an appointment and take the practice exam, email azopcert@azdeq.gov with your name, the grade and class of the test you want to take, and the date and time you want to take the practice exam. Practice exam office hours are Monday-Friday 8:30am-4pm. Exams take up to 2-3 hours to complete.

Helpful Websites for Study Information:

Free Resources

Arizona Core Competencies: Training modules. www.waterhelp.org/index.php/client/arizona

Sewer Geek: Wastewater collection study information. www.sewergeek.com

The Water Sifu: Podcasts on water distribution and water treatment. www.thewatersifu.com/

Indigo Water Group: Resource for water and wastewater information. They have an excellent math book called Sidney's Big Book of Math. Go to downloads then math workbook. <https://www.indigowatergroup.com/math-workbooks/>

Water Quality Inc: Free and paid practice exams. <https://www.waterqualityinc.com/>

The Kentucky Department of Environmental Protection: They have test prep materials and great information. Disregard anything Kentucky specific but the rest of the information is very useful. <https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/operator-certification-program/Pages/test-preparation-materials.aspx>

Cram: Flashcards for operator exams. www.cram.com

New Mexico Environment Department: New Mexico Study Manual for Water. <https://www.env.nm.gov/wp-content/uploads/sites/5/2016/07/NMWaterSysOperStudyMan.-Update-11-2016.pdf>

American Water College Math Links-Water and Wastewater: The American Water College has many helpful videos on Youtube.com about water and wastewater math. To find them, search "American Water College" followed by the subject you wish to see explained in the search engine of your choice. Examples: Pounds formula, Detention Time, Cubic Yards Removed, Chlorine Pounds per day, Oxygen Transfer to Water, Heat Value BTUs, MCRT-Mean Cell Residence Time, Cost Per Day, Flow Rate, Pounds of Volatile Solids Pumped, Volume of a Tank,

Chlorinator Feed Rate, Solids Loading Rate, Pump Efficiency, Pond Hydraulic Loading, MLSS-Mix Liquor Suspended Solids, Flow Rate #2, BOD Removal Efficiency, Volume of Tank, Percent Solids Recovery, Grit Removal Rate.

Paid Resources

Ragsdale study manual: They have excellent study guides. See Training Materials on the left under the User Menu. www.ragsdaleandassociates.com

Rural Water Association of Arizona (RWAA): Provides training and test prep. www.rwaaz.org

American Water College: An online resource that guarantees a passing score on your operator certification exam. www.americanwatercollege.org/

CEU Plan: Provides affordable state approved online training solutions for the purpose of water, wastewater, environmental health, and engineering professional license renewal/recertification throughout the United States. www.ceuplan.com

Small Water Supply: Offers many different types of assistance. They have a wealth of web links to online tutorials. Several helpful math videos on Youtube.com. Use their search function to find links to helpful resources and videos. <http://www.smallwatersupply.org/Home>

Technical Learning College (TLC): Offers distance based or independent study courses that are approved nationwide for operator renewal. They also provide free online practice exams. <https://www.abctlc.com/>

National Environmental Services Center: Montana training CDs. <https://www.nesc.wvu.edu/home>

BC Water Jobs: Water jobs across the USA. <http://bcwaterjobs.com/>

Zarathom: An online-based training company designed to provide professional water operators a 'classroom environment' to improve their general knowledge of water industry standards, and at the same time satisfy the continuing education and contact hour requirements associated with the certified water operator license renewal. <http://zarathom.com>

SafePersonnel: Suite of safety and compliance programs that includes staff training, safety incident reporting and tracking and SDS management. Municipalities, hospitals, businesses, and other non-education related organizations to increase safety and compliance can use customizable programs. www.safepersonnel.com

Study/Reference Books:

If you wanted to purchase a book, the following is a list of many different study/reference books. The ones from the University of California Sacramento are probably the most popular. The Water Distribution O&M is the one for the distribution exams.

California State University, Sacramento (CSUS) Foundation, Office of Water Programs

(916) 278-6142

<http://www.owp.csus.edu/>

Water Distribution System Operation and Maintenance

Designed to train operators in the safe and effective operation and maintenance of water distribution systems, this manual describes the responsibilities of being an operator for water storage and distribution systems. Material in this manual will provide an understanding of the basic operational and maintenance concepts of water distribution systems and will help operators develop the ability to analyze and solve problems when they occur.

Operation of Water Treatment Plants Vol. 1

Designed to train operators in the safe and effective operation and maintenance of water treatment plants, Volume I emphasizes the knowledge and skills needed by an operator working in a conventional water treatment plant used for treating surface waters.

Operation of Water Treatment Plants Vol. 2

Designed to train operators in the practical aspects of operating and maintaining water treatment plants, emphasizing safe practices and procedures. Information is presented on drinking water regulations (including the Safe Drinking Water Act), iron and manganese control, fluoridation, softening, trihalomethanes, demineralization, handling and disposal of process wastes, maintenance, instrumentation, and advanced laboratory procedures. Administrative procedures for dealing with budgeting, setting rates, recordkeeping, personnel administration, public relations, and emergency planning.

Operation and Maintenance of Wastewater Collection Systems Vol. 1

Designed to train operators in the practical aspects of operating and maintaining wastewater collection systems, emphasizing safe practices and procedures. Information is presented on the importance and responsibilities of a collection system operator, the need for collection system O&M, and the components and typical layouts of collection systems. Operators learn safety procedures for construction, inspection and testing of sewers, inspection of manholes, and underground construction and repair. Detailed instructions are included for using closed-circuit television, clearing stoppages, cleaning sewers, and controlling roots, grease, odors, and corrosion in collection systems. Focuses on the knowledge and skills operators need to identify actual collection system problems and select appropriate methods to solve them. Operators also learn to solve arithmetic problems relating to the operation and maintenance of wastewater collection systems.

Operation and Maintenance of Wastewater Collection Systems Vol. 2

Focuses on three areas: (1) lift stations, (2) sewer rehabilitation, and (3) administration of a collection system agency. Detailed information is provided on the components and practical operation of lift stations. Operators learn to operate and maintain a variety of types of motors, supervisory controls, pumps, valves, and other equipment. They will also learn to examine the condition of a sewer system, set up a sewer rehabilitation program, and safely use various methods to replace or repair damaged sewers. Covers critical aspects of effectively administering a wastewater collection agency or department. Administrative topics include overall organization of the agency as well as employment, training and compensation of personnel, selection and acquisition of equipment and facilities, system mapping, management information systems, report writing, and public relations. Operators learn to organize and administer all facets of a collection system agency.

Operation of Wastewater Treatment Plants Vol. 1

This widely used professional program trains operators in the safe and effective operation and maintenance of city wastewater treatment plants. Volume I emphasizes the knowledge and skills needed to operate plants efficiently. Operators will gain an understanding of the basic operational aspects of their plant and learn how to analyze and solve problems.

Operation of Wastewater Treatment Plants Vol. 2

This widely used professional program trains operators in the safe and effective operation and maintenance of city wastewater treatment plants. Volume II shifts the focus toward larger conventional treatment plants and teaches operators in supervisory and management positions how to use best practices, including following regular maintenance programs, accurate recordkeeping, maximizing information technology, and preparing and writing meaningful reports.

Advanced Waste Treatment

This text provides advanced training for operators of wastewater treatment plants. From California State University, Sacramento, the program covers biological treatment processes and physical–chemical treatment processes.

Manual of Cross-Connection Control Tenth Edition

The Manual of Cross-Connection Control, Ninth Edition contains field test procedures for backflow prevention assemblies (with illustrations for each step), specifications for backflow prevention assemblies, sample forms for a cross-connection control program, a model ordinance for a cross-connection control program and much more information.

Manage for Success

This training manual stresses problem identification and solutions, working together as a team, communication, motivation, and evaluating and improving solutions to problems. Managers completing the training program will be confident that they have the tools and the ability to apply them to be successful managers. Utilities can help ensure that they have the needed management capacity by having their management personnel complete this training program.

American Water Works Association

(800) 926-7337

<http://www.awwa.org>

Water Supply Operations I: Water Sources, Textbook

Water operator training text teaches fundamentals of water sources for drinking water. Edition: 2003, Hardback, 212 pp. ISBN 1-58321-229-9; Catalog Number 1955.

Water Supply Operations II: Water Treatment, Textbook

Water operator training text teaches fundamentals of common water treatment processes and techniques. Edition: 2003, Hardback, 552 pp. ISBN 1-58321-230-2; Catalog Number 1956.

Water Supply Operations III: Water Transmission and Distribution, Textbook

Basic principles of design, construction, operation, and maintenance of water transmission and distribution systems. Edition: 2003, Hardback, 553 pp. ISBN 1-58321-231-0; Catalog Number 1957.

Water Supply Operations IV: Water Quality, Textbook

Water operator training text teaches fundamentals of water quality analysis and drinking water regulations. Edition: 2003, Hardback, 214 pp. ISBN -58321-232-9; Catalog Number 1958.

Water Supply Operations V: Basic Science Concepts and Applications

Water operator training text teaches fundamental mathematics, hydraulics, chemistry, and electricity as they apply to municipal water supply. Edition: 2003, Hardback, 645 pp. ISBN 1-58321-233-7; Catalog Number 1959.

Math Problems for Water Distribution Operators: A Guide to Preparing for Distribution System Operator Certification Exam

Math study text is designed to help water distribution operators improve their math skills, pass certification exams, perform their jobs better, and advance their careers. This book is ideal study guide for the mathematics portion of certification examinations. Each book is organized into four parts consisting of material associated with the first four grade levels. Edition: 2007, Softbound, 250 pp. ISBN 1583214550; Catalog Number 20628.

Math for Water Treatment Operators: A Guide to Preparing for Water Treatment Operator Certification Exams

This book is ideal study guide for the mathematics portion of certification examinations. Each book is organized into four parts consisting of material associated with the first four grade levels. John Giorgi. Math study text is designed to help water treatment operators improve their math skills, pass certification exams, perform their jobs better, and advance their careers. Edition: 2007, Softbound, 250 pp. ISBN 1583214542; Catalog Number 20618

Water Operator Certification Study Guide, Sixth Edition

This study guide is specially designed to give water operators and students practice in answering questions that are similar in format and content to the questions that appear on state certification exams. ISBN 9781583218525 - 20517-6E

Wastewater Operator Certification Study Guide

Sample questions are provided for Classes I, II, III, and IV wastewater operator certification exams, so you can study the questions that are specific to your grade level. Answers and references are included for questions. Math questions include the method to solve. ISBN 978-1-58321-728-3 - 20683

WSO Water Treatment, Grade 1

Organized into 21 chapters addressing core test content on certification exams. Chapters discuss regulations, operator math and chemistry, and specific treatment processes in detail. Other chapters cover water quality testing, electrical and monitoring systems, treatment plant safety, and monitoring and recording requirements. Everything you need to know to pass your Grade 1 exam is included in this book. ISBN: 9781625761231

Water Treatment, Grade 2

Organized into 22 chapters addressing core test content on certification exams. Chapters discuss regulations, operator math and chemistry, and specific treatment processes in detail. Other chapters cover water quality testing, electrical and monitoring systems, treatment plant safety, and monitoring and recording requirements. Everything you need to know to pass your Grade 2 exam is included in this book. ISBN: 9781625761248

Water Treatment, Grades 3 and 4

Organized into 15 chapters addressing core test content on certification exams. Chapters discuss regulations, operator math and chemistry, and specific treatment processes in detail. Other chapters cover water quality testing, electrical and monitoring systems, treatment plant safety, and monitoring and recording requirements. Everything you need to know to pass your Grade 3 & 4 exam is included in this book. ISBN: 9781625761255

WSO Water Distribution, Grades 1 & 2

Organized into 22 chapters addressing core test content on certification exams. Chapters discuss regulations, operator math and chemistry, and specific distribution processes in detail. Other chapters cover water use and system design, water mains, hydrants and valves, water system supply security and public relations. Everything you need to know to pass your Grade 1 or 2 exam is included in this book. ISBN: 9781625761262

WSO Water Distribution, Grades 3 & 4

Organized into 13 chapters addressing core test content on certification exams. Chapters discuss regulations, operator math and chemistry, and specific distribution processes in detail. Other chapters cover water use and system design, water mains, hydrants and valves, water system supply security and public relations. Everything you need to know to pass your Grade 3 or 4 exam is included in this book. ISBN: 9781625761279

Field Guide to SDWA Regulations

This operations-oriented book explains all the regulations and how they fit together. The book provides regulatory guidance and advisories related to USEPA regulations in a single, easy-to-follow guide. It compiles information from USEPA, AWWA, and others and presents it in an understandable format. Useful to water utility managers, treatment and distribution operators, and environmental engineers. ISBN: 978-1-58321-385-8 - 20599

ACR Publications

(800) 433-8150

<https://www.acrp.com>

FlashCerts!™

FlashCerts!™ are flash cards sold by AWWA that enable users to recall facts and numbers with ease. FlashCerts!™ improve memory retention and instill confidence. FlashCerts!™ are ideal for certification levels I through III. FlashCerts!™ are available for Wastewater, Water Treatment, and Water Distribution.

Simplified Math for Waterworks Operators

This 80 page workbook guides users through math applications commonly used in the waterworks industry. It separates formulas, conversion tables, glossaries, and friction loss tables into easy-to-use sections. While most math books are divided into math concepts, this text is divided into application topics such as volume, flow, etc. so you can easily use the material for real-world applications.