Certification ABCs

Operators Help Develop Certification Exams

by Suzanne De la Cruz and Stephen W. Ballou

The goal of the Association of Boards of Certification (ABC) and of most state operator examining boards is to develop certification exams that test operators on job-related tasks that are required to protect public health. The fairness and accuracy of the examinations cannot be overstated because the resulting scores affect the livelihood of operators seeking a license to practice.

ABC, which tests approximately 14,000 examinees per year, follows national testing standards to help ensure that exams developed by the association are valid measures of operators' knowledge, skills, and abilities. Passing the certification exam should mean that the worker is able to perform his or her job without putting the safety and welfare of the public in danger.

Determining Exam Content

Specific steps in the development phase help ensure that certification exams reflect the knowledge and skills required for a job. The critical element to each step, however, is not only that each step is performed but also by whom each step is performed. For a water treatment certification exam to be considered valid, for example, each step requires the participation of water treatment operators.

Operator involvement is essential for all parts of the exam development process because operators have direct, up-to-date experience with the jobs being tested. Supervisors, trainers, and others with specialized knowledge about the job are also involved in the exam development process. But, by far, the majority of individuals involved in developing an operator certification exam should be water operators.

Step 1. Defining the Job Tasks

Identifying the job tasks and their importance to maintaining public safety is an essential first step in developing a certification exam. The steps normally taken in identifying job tasks (job analysis) were discussed in the Certification ABCs column in the April and May issues of Oplow.

Operators participate in each phase of the job analysis process. This includes participating in a workshop to identify job tasks performed by operators and the capabilities required to perform these job tasks. From the information developed during the workshop, a survey is prepared that includes the task statements and capabilities identified during the workshop. The survey is sent to and completed by operators who provide information on how frequently each item is performed and how important it is in maintaining public health and safety.

Step 2. Writing and Reviewing Questions

Exam questions are developed from the results of the job analysis process so that exams are representative of job tasks. Again, the operator is involved by writing new questions. ABC accepts only questions that cover the most critical job tasks identified from the survey. The purpose of this is to ensure that all questions on the certification exam measure at least one important aspect of an operator's job.

Each question is reviewed for its relative importance to an operations job to ensure that critical elements of the job are covered. Each new question is further reviewed for technical accuracy, style, readability, and possible bias to subgroups. The reviewers make sure the correct answer is the best answer, that the incorrect options are wrong, and that the question is free from racial, gender, and cultural bias.

Step 3. Creating the Exam

Results of the job survey are used to develop valid certification exams. Specifications for certification exams (i.e., the categories of required knowledge such as safety, pumps, maintenance, administration, etc.) are based on the results of the job analysis and reflect how often a task, knowledge, skill, or ability is needed in practice and how much impact it has on effective job performance.

During the exam development process, operators and other subject matter experts review and select the questions for the exam, often in a workshop setting. The questions selected reflect the appropriate exam specifications that were identified by the job analysis as well as by previous statistical performance, such as difficulty level, of the questions.

ABC primarily looks at two statistical characteristics. The first is the p-value, which is the ratio of examinees who have answered the question correctly. The second is the discrimination index: a value that ranges from -1 to 1 and shows how well the item discriminates between examinees with high scores and low scores (i.e., if examinees with high overall scores on the exam are getting the question correct and examinees with low overall scores on the exam are missing the question, the discrimination index will be close to 1). We also look at response patterns for the incorrect options.

Step 4. Determining the Passing Score

The passing score is defined as the minimum score required to pass an exam. Defining the passing score required for certification is one of the most important but difficult aspects of the exam development process. For a certification exam process to be considered fair, an exam with more difficult questions should have a lower...
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passing score than an exam with
easier questions. Passing scores must
be high enough to protect the public
but not so high as to unnecessarily
screen out qualified operators.
Operators have always been
significant contributors to ABC’s
certification exams. Every attempt is
made to include operators from all
regions of the US and Canada in
carrying out the job survey, exam
development workshops, and item-
writing workshops. The typical profile
of operators participating in water
treatment and distribution exam
development activities is illustrated in
the table on page 5. These data were
acquired from workshops and job
analysis surveys conducted during the
past two years.

Water treatment and distribution
operators interested in participating in
exam development activities should
contact ABC at testing@abccert.org.

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Earning Public Confidence with Education

by Steve Guthrie

Small system operators must wear many hats. Their jobs require not only knowledge of water treatment and distribution systems, but also skill in dealing with the public and the media. As the plant supervisor of a small water plant in Clarinda, Iowa, for the last five years, I have had the opportunity to boost public confidence in the water we supply by developing a public relations program. Public relations tools are fairly simple, and by learning them, any small water plant operator can learn how to deal with the public.

The main reason for a public relations program is to gain public trust. This is done by being open and honest with the public. Make your customers feel like you are their friend and that they can trust you. Once an operator accomplishes this, the public will be much more understands when there is a taste and odor outbreak or you have to issue a boil order because of a main break.

Just like any routine task, a good public relations program requires a little elbow grease and some good planning. There are three easy steps to developing better public relations:

- Preparation
- Promotion
- Education

Preparation

The first and most important step for developing a relationship with the public is preparation. An operator may be well versed in the topic—water treatment—but if the operator doesn’t know the basics of giving a proper speech or tour, his or her ability to communicate with the public will be severely hampered.

A good speech is a series of remarks, opinions, or ideas expressed clearly enough to be heard, interestingly enough to be listened to, and effectively enough to inspire action or to direct thought. This concept should be an operator’s focus when making a presentation to the public. There are four steps to planning a speech or presentation:

- Analyze your audience and occasion.
- Select your subject.
- Determine your exact purpose.
- Gather your material and do research.

Analyze your audience. Your audience is the general public — your customers, your neighbors. An operator must assume that the audience knows nothing about the subject of water treatment and prepare a presentation accordingly. If the audience is your local second grade class, do not use terms such as “coagulation” or “flocculation.” Use terms like “sticky stuff” and “giant mixing bowl” instead.

Select your subject. This is easy because your subject is what you do every day—water treatment.

Determine your exact purpose. This step is also easy to do. Your exact purpose should be to inform people and encourage their confidence that a competent person is making their water safe to drink.

Gather your materials and do your research. This step includes doing any extra research needed, such as learning about the history of the plant or more about the water sources. When possible, use visual or hands-on methods to get across your message. Show people a cross section of a filter so they can get an idea of how the process works. Show them a diagram of where the water comes in and goes out of the plant and into the distribution system.

Once you have an idea of how to prepare a presentation, it helps to understand the basic format. There are three parts to a speech: the introduction, the body, and the conclusion. An operator should be familiar with this format, as it will serve as an outline to prepare and give a good presentation.

Making a presentation and giving a public tour are similar activities, and certain tips apply to both. The first tip is memorize your information, as this will demonstrate your knowledge of the subject and impress your audience. Another idea for a good presentation or tour is the three-word phrase, “simplify, illuminate, and advance.” Simplify your material so that your audience is able to understand it. Illuminate key points of the tour that you want the audience to really grasp. Advance with the tour. Do not dwell on one process the entire time, but be careful not to go too fast.

Getting the Word Out

The next phase for developing good public relations is getting the word out. Let the community know that you are holding classes or giving tours. Make sure they understand that you are willing to educate them about their water supply. You can spend money to purchase advertising space or to print posters and informational brochures, but there are also ways to get the word out without spending a dime.

There are three major media outlets that can help spread the word.
receive a bill or call the utility with questions or complaints. Training the people who answer the phone to talk about the programs the utility offers to the public will help spread the word. And speaking of bills, include a flyer that has the dates and times of your programs in the next bill. This is an easy way to get the word out without spending extra money on postage.

**Education**

The final and most time-consuming phase of a public relations program consists of educational activities. This is the phase where you actually meet the diverse people in your community. The education part of your public relations plan can be broken down into three areas: classes, public tours, and visual materials.

**Classes.** If there is sufficient interest in the community, your education phase could include weekly classes on different water treatment subjects. Senior citizens and public officials would be good potential students. Make sure you cover all the basics and devote enough time to get your main points across, but not so much time that you can’t cover other topics. For example, an operator can devote a four-week session entirely on how water is disinfected or on the state regulations that he must follow, or he could spend one night on water sources, another night on treatment processes, one class on regulations, and the last night on the distribution system. These courses require an operator to give up a free night during the week, but the rewards will be worth it.

**Public Tours.** Another part of the education phase are public tours. This is where an operator can really show the community where he or she works and what he or she does for a living. It is crucial that whoever is conducting the tours be able to deliver a speech well. The community doesn’t want someone they view as a dunce taking care of their water!

**Visual Materials.** The last part of the education phase is to have materials on hand for the public to view or have mailed to their residences. Videos, bill stuffers, fact sheets, manuals, and books are available through AWWA that fit this purpose. Review the materials before you release them to make sure that terms and ideas are stated clearly enough. If a book is too technical, it will most likely bore the average reader.

**Summary**

A small systems operator must be prepared, have the right tools, and interact well with the public to have an effective public relations program. An operator must be able to speak clearly and concisely to convey the proper image of the utility. And, most important of all, an operator must be friendly. Operators who develop their communities’ trust will form a lasting partnership that will be rewarding for years to come.

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**Videos Help Educate**

AWWA has numerous products that can help utilities educate their customers about drinking water. You’ll capture the attention of classes, tours, and town council meetings with AWWA videos with a public focus, which include:

- **We Treat Water Right: The Basics of Water Quality**, catalog #65129
- **Top Consumer Questions About Drinking Water**, catalog #65146
- **A Consumer’s Guide to Water Conservation**, catalog #65147
- **Source Water Protection**, catalog #65144
- **Professor Water: Fantastic Facts About H2O**, catalog #65066V
- **Public service announcements that are ready to air in 30-second spots include Dedicated to You: Safe Drinking Water PSA Package**, catalog #65129

**Water Quality Reports: Public Service Announcements**, catalog #65135

To help your utility staff improve their public relations skills, AWWA videos include:

- **Public Affairs for Water Utilities: Case Studies of Successful Public Affairs Programs**, catalog #65113
- **Customer Service for Water Utilities**, catalog #65028
- **Customer Service II: A Team Effort**, catalog #65065V

For more public education tools, check out the "Public Information and Education" section in the AWWA Bookstore Catalog, or talk to a customer service representative at (800) 926-7337. Please ask about obtaining rebroadcast permission before airing on public TV.