I magine cooking your favorite meal while someone follows you with a checklist, making sure that you include each ingredient in the exact amount and in the correct order, mix using the proper technique and then cook at the correct temperature for the right amount of time. It could be pretty intimidating, right? Well, Water Quality Association (WQA) laboratory technicians experience this quite often while performing tests and being audited, and they are not intimidated one bit. It is a chance to demonstrate their knowledge and skill and contribute valuable insight to the quality of the tests performed at WQA.

By Sarah Zrout

Internal auditing boosts quality of laboratory testing

Most drinking water treatment unit additive or component testing has a nationally approved standard that explains the details of testing requirements. Standards are important because they provide exact steps that any laboratory can follow to get similar results. The downside of using and retrieving information directly from standards is that they can be quite extensive with testing instructions, including numerous references to other sections and annexes all throughout to cover just one test. The standards also don't provide details specific to a particular lab regarding test bench set up, analytical capabilities, standard equipment, etc. To simplify and improve the process of performing these tests, a procedure based on the standards is made and tailored to fit WQA equipment and facilities.



The WQA testing laboratory has an operating procedure or method for every test that is performed and every piece of equipment that is utilized. These include in-house calibrations as well as issues ranging from controlling laboratory contamination to what to do when the power goes out. The importance of these procedures is that they are the first steps toward ensuring that a test is done right. Procedures are also vital to the training of employees. These procedures reviewing and referring to the specific standards the procedures are based on, fully understanding the manufacturer's installation instructions and having open communication with the manufacturer—help ensure that technicians have the skills to perform a procedure correctly from start to finish.

## **The Auditing Process**

Auditing is performed two different ways to ensure the testing process is being performed correctly. The first check is to make sure the technicians have the correct procedure. Every time WQA gains additional capabilities or obtains new equipment, a new procedure is written. Existing procedures are also reviewed each time a standard is updated or new equipment is obtained in order to see if any changes are necessary to correctly reflect current practices. Procedures are reviewed as a whole at least one time per quarter to make sure nothing has been overlooked during individual reviews. Additionally, if a procedure has not been updated or used by a technician for two years, the procedure itself is audited to see if it is still valid and compatible with the capabilities of the lab.

The second step in auditing procedures is to physically shadow the technicians while they are performing several duties using these written standard procedures. This includes laboratory techniques such as calibration and use of equipment, preparing stocks, preparing challenge tanks, hooking up test units, wetting and conditioning media, collecting samples and recording all raw data.

Analytical chemists are also audited while they are analyzing samples on various types of equipment housed in the WQA analytical laboratory. The act of auditing technicians helps in several ways. Technicians physically act out the steps of the procedure to demonstrate the clarity and efficiency of the procedure. If a step seems especially long or difficult, technicians suggest different equipment that may be used, if accepted in the standard. They might also clarify a step to make it more specific to the WQA laboratory practices.

Internal auditors are trained by completing an ISO/IEC 17025 course emphasizing auditing. Once trained, an internal auditor can train additional employees to assist in the process. Auditors provide a third-party view that may not always be observed from within the laboratory. Technicians are busy testing and, once trained, don't always have the chance to consult with fellow employees. Auditors can fill this role by watching different employees perform the same procedure and offering helpful advice on how someone might have performed a step more efficiently. By working closely with the technicians, auditors also assist the managers in employee recognition.

Raw data sheets are also important to ensure testing is performed correctly. These sheets are the official record the technician takes while performing all components of the test and are based on the standard operating procedures and standards that are followed. This is another way to check that the technician gathers all pertinent information.

All three of these types of documents standards, internal procedures and raw data sheets—work together to provide technicians with the tools they need to be successful. Internal auditing ensures that they are using their tools correctly. *wqp* 

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