



Of interest to:

- Course developers, Instructors & Training Organizations
- Industry Regulators
- Utilities and the Public

The ABCs of Training Standards

EOCP has created 2 tools to help support and encourage Instructors and Training Organizations to develop courses which can be recognized for Continuing Education Units (CEUs):

1. A Guide: *Building an Effective Course* – walks you through key steps to build a course including considering the “Who, What, When, and How”. (The link is on the Training Registry homepage.)
2. This tool, *The ABCs of Training Standards* – helps you focus in on why standards are important, what’s in place, and provides a “how to” on using existing standards - lists of competencies, to help zero in on your course’s Who (target participants) and What (Learning Objectives).

Why Care About Training Standards? - What Standards?

The need for *ongoing* training is recognized by most Canadian professional groups of every kind because we live in a changing world. Professionals not only need refresher courses, they require knowledge to keep up-to-date. Training also helps professionals advance on their career path so they know how to approach new responsibilities.

Since Water & Wastewater Operators play such a critical role in helping to ensure public health and safety, both the *relevance* and *quality* of training are regarded as particularly important. Thus, the need for training standards was emphasized in the *2008 Ombudsman’s Report*.

So requiring training is not enough! Based on the cost, time, and resource commitments involved, Operators must have training that:

1. Is delivered in a way that helps them *learn and remember* so they can *apply* the training (**Methods**)
2. Provides *meaningful* and *relevant* information and learning (**Content**)

Next is a summary of how EOCP has addressed standards concerning methods of delivery. This is followed by a major focus on the standards relied on in developing content for Operators’ courses.

1. Methods

Standards based on Adult Education research & IACET

EOCP has requirements for our Peer Review processes to determine if a course can be recognized for CEUs. These are based on adult education research on learning and learning retention, as well as some standards of the International Association for Continuing Education & Training (IACET):

- **Delivery methods** – The Course delivery methods must include some “interactive” elements to engage participants. For example, a course on valves *cannot* be 100% presentation.
- **Limit on daily length of a course** – Six hours is the maximum length currently recognized since participants are able to absorb only so much in a day.
- **Assessment** – Some method of assessing what participants learned must be included, such as quizzes, exams, or performance demonstrations.

Although not required at this time, EOCP strongly encourages use of equipment and hands on activities where these fit with course subject matter.

Designing and delivering courses in a way that advances Operators’ learning and their being able to apply that learning is essential. In addition, the subject matter or *content* must meet Operators’ needs for training. Based on the fact that across the Industry, Operators have a range of needs, EOCP has turned to well laid out standards for course content.

2. Content	<i>Standards based on ABC’s Need-to-Know/Competencies</i>
-------------------	--

If you are building and/or providing courses for Water and Wastewater Operators - how can you be sure that the content will be appropriate for CEU recognition? *Or*, as a Utility or Water Supplier, how do you know if a course is going to be useful/relevant for your Operator?

The underlying theme in these questions is really – what do Operators working in a particular area need to know/be able to do? Put another way, what “competencies” must they have? For the Peer Review process, EOCP has a standard requirement that the course application must include information on a course’s Learning Objectives. This is used to check that a course matches up with relevant needs:

- **Learning Objectives** – All TR course applications must identify what participants can expect to be able to do by the end of the course. These Learning Objectives are used as the basis for participants’ evaluation of the course. The format for Learning Objectives and examples of them are provided in EOCP’s, *Guide, Building an Effective Course*.
- **Identifying Operator Competencies** – Operators have many different roles and responsibilities across the Water & Wastewater industry. Some courses may be generic and cover the needs of many Operators, while other courses need to be specific to address special competencies for particular roles. EOCP standards draw on the ongoing research of organizations that maintain a set of “grids” of competencies for Operators.

The remainder of this document helps you understand the structure behind disciplines and certifications related to standards for Operator competencies. It also shows how you link them to course Learning Objectives.

Deciding on the “Who” & “What” - Disciplines & Certification Levels

Operators’ certifications and the related competencies that they need have been developed based on the type and complexity of a system they work on as well as the roles they have.

Water Distribution I II III IV	Wastewater Collection I II III IV	Small Water Systems ----
Water Treatment I II III IV	Wastewater Treatment I II III IV (Municipal or Industrial)	Small Wastewater Systems ----

Abbreviations → WD (Water Distribution); WT (Water Treatment); WWC (Wastewater Collection); MWWT (Municipal Wastewater Treatment) & IWWT (Industrial Wastewater Treatment); SWS (Small Water System); SWWS (Small Wastewater System)

How to Identify Your Target Participants Related to Course Content

1. So the first key question to ask is about the “disciplines”. - Is the course you are developing:

- ❑ “Generic” content that crosses all the disciplines, e.g., Backflow Prevention – or
 - ❑ Specific to one or some of the disciplines, e.g., WD, WT, and SWS – Drinking Water Quality
2. The next main question is whether the course content is aimed at:
- ❑ All Operators from beginners to senior ones, e.g. Recent Changes to Regulations
 - ❑ A specific level, e.g. Introduction to Water & Sewer Line Installation

If you find these are challenging questions to answer in isolation – there is help!

Using this structure of disciplines and certification levels, years ago a North American organization, the “Association of Boards of Certification, (ABC) began developing sets of competencies, as in the *abilities, experience, skills, knowledge, and judgement* required for a particular Operator job. EOCP is drawing on ABC’s framework as standards.

COMPETENCIES STANDARDS. ABC not only developed a kind of competencies grid for each discipline (ABC Need-to-Know Criteria), but they continue to survey the industry to identify the whole range of Operators’ tasks & what is needed to do the tasks “competently” at different levels.

Based on their survey results, ABC maintains the “ABC Need-to-Know Criteria” for *most* of the categories or disciplines you saw in the previous table. A similar Canadian set of documents has been worked on, but has not yet reached the level of acceptance of the *ABC Need-to-Know*.

ABC’s webpage with Need-to-Know links- http://www.abccert.org/testing_services/need_to_know_criteria.asp

The screenshot shows the ABC website interface. At the top right, there are links for Home, Member Login, About Us, and Contact Us. The main header features the ABC logo and the tagline 'Advancing Water Quality & Integrity'. A sidebar on the left lists 'Testing Services' (Information for Testing Clients, Information for Examinees, Examination Resources, Exam References, FAQs) and 'Exam References'. The main content area is titled 'Need-to-Know Criteria' and includes a graphic of a pencil on a test paper. Below the graphic, it states 'Study materials to help you succeed.' and provides information about the criteria. A blue box at the bottom of the screenshot lists 'ABC's Need-to-Know Criteria Individual Links by Discipline:' with five links: Water Distribution, Water Treatment, Wastewater Treatment, Wastewater Collection, and Small Water Systems.

Using an ABC Need-to-Know Document to Help with Learning Objectives

You can use an ABC Need-to-Know Document in at least 2 common ways:

- ❑ If you already have a course and course objectives – check to confirm that you have the right target participants, i.e., discipline(s) and level of certification. This could also influence the title you give to the course.

- ❑ If you want to develop course objectives for a particular target group, start with the relevant Need-to-Know (by discipline) and identify the competency or competencies your content will help address. Build the course objectives based on what you find.

To help you understand how the ABC Need-to-Know criteria work, here is an overview of what you'll find. *Using the links provided for the ABC webpages, it may be most helpful for you to print the most relevant one and have it in hand as you look at this summary.*

Each of the Need-to-Know documents contains 3 main elements:

1. A "core competencies" list – essential tasks and capabilities that have been identified
2. Tables with the list of the core competencies and what *level of knowledge & judgement* is required for each task
3. A list of capabilities required

An example follows from the *Distribution Need-to-Know Criteria*, document. We start with the list of "core competencies". These are clustered into "job duties". This is what the Distribution list looks like:

1. Core Competencies List - Distribution:

- System Design
- Comply with Drinking Water Regulations
- Monitor, Evaluate, & Adjust Disinfection
- Water Quality Parameters and Sampling
- System Inspection
- *Install Equipment **
- Operate Equipment
- Evaluate and Maintain Equipment
- Perform Security, Safety, and Administrative Duties

Let's use "Install Equipment" as our example while we walk through the other 2 elements, the Tables and lists of capabilities.

2. Tables with Core Competencies:

Each of these core competencies is fleshed out in a Table. The following Table as depicted provides several pieces of information for "Install Equipment" including the level of competency.

Note: Operators are not expected to have exactly the same knowledge at different levels of certification. For example:

- **Level I: "Comprehension"** for Hydrants means a basic understanding is needed, like the names of parts.
- **Level II/III: "Application"** means in this case that Operators must be able to apply information and make calculations if required.
- **Level IV: "Analysis"** – Operators must be able to do analysis like examining equipment and diagnosing issues. *(For more detail about what these words mean see any "Need-to-Know" document.)*

To illustrate the kinds of information provided in the Tables, here is our example of one of the Distribution core competencies - Install Equipment. It is broken down further related to different kinds of equipment.

		Levels I to IV			
		Class I	Class II	Class III	Class IV
Kinds of equipment	* Install Equipment				
	Backflow prevention devices	Comprehension	Comprehension	Application	Application
	Hydrants	Comprehension	Application	Application	Analysis
	Meters	Application	Application	Application	Analysis
	Piping and fitting	Application	Application	Application	Analysis
	Rigging	Application	Application	Application	Application
	Service connections	Application	Application	Application	Analysis
	Shoring	Application	Application	Application	Analysis
	Taps	Application	Application	Application	Analysis
	Valves	Application	Application	Application	Analysis
Water mains	Application	Application	Application	Analysis	

(Courtesy of ABC)

3. List of Capabilities for the Tasks/Core Competencies:

Using the example of *Install Equipment*, see how the list of *capabilities* relates to the Table:

- Ability to follow written procedures
- Knowledge of approved backflow prevention devices
- Knowledge of facility operation and maintenance
- Knowledge of function of tools
- Knowledge of pipe fittings and joining methods
- Knowledge of piping material, type and size
- Knowledge of regulations
- Knowledge of start-up and shut-down procedures

IN SUMMARY. All of this information provides standards to help address: 1. Identifying the target Operator groups (general or specific); 2. Framing the Learning Objectives for the levels (Comprehension, Application, and Analysis); 3. Developing a course from there. *EOCP's Peer Review process relies on this as standards for the Subject Matter Experts (SMEs) to assess what disciplines and level a course should be recognized for CEUs.*

Tip. *Go through the Need-to-Know Criteria to give you ideas about new courses - filling in gaps!*

Additional Resources

Other ABC Support & Materials Online

ABC has also provided specific resources to help Operators with writing examinations. Although these resources are not all directly relied on for the Course review processes, they may be helpful to those developing courses. For example, in addition to the *Need-to-Know* documents they have:

- A Testing Services page at http://www.abccert.org/testing_services/
- Formula/Conversion Tables (These include links for both American and Canadian measurements)
- Study Guides - Mainly from American Water Works Association & Water Environment Federation
- Examination References.
- Sample Exam Questions

For additional information on standards for Peer Review of Instructors & Training Organization applications see [EOCP's TR Policies and Guidelines, document.](#)